

Data File User's Manual

Several Excel files were created for the quantitative risk analyses of surface water, surface sediment, wildlife, fish, crab, bivalves, and polychaetes for the Baseline Ecological Risk Assessment (BERA). These files are provided in Attachments A2, A3, A4, A12, and A13 of the BERA. Files provided in each attachment associated with the risk analyses include a data file for the Study Area, a data file for the four Phase 2 reference areas, and ProUCL input and output files using the reporting limit (RL) and/or method detection limit (MDL) where applicable. Recommendations and instructions for each of the files are provided in the following.

1 STUDY AREA AND REFERENCE AREA DATA FILES

1.1 Description

The Study Area and reference area data files are provided in a flat file format. The Study Area data file consists of the complete BERA dataset for the media and exposure scenario of interest. These data files contain analytical chemistry results (including reconstituted concentrations for striped bass and blue crab tissue), the variations for summing chemical concentrations as described in Section 4.3.4 of the BERA, and several fields that were created to facilitate data analyses. These files do not include field duplicates or rejected data. Fields added to facilitate data analyses include but are not limited to the following:

- **UCL_KEY1** is a unique identification (ID) created to group data by chemical for calculation of 95% upper confidence limits (95% UCLs).
- **USABILITY_HIERARCHY** is a usability flag created to implement the analytical method selection hierarchy (see Section 4.3.2 of the BERA) for chemicals analyzed by more than one method per sample. This field is populated with either a "0" or a "1." Records flagged with 1 are included in the dataset, meaning the analytical results are from the superior analytical method; records flagged with 0 are not included in this file because the analytical results are obtained from an inferior analytical method.
- **RISK_SCREEN_USABILITY** is a usability flag created to select the records used for the Phase 2 Screening Level Ecological Risk Assessment (SLERA) in Section 5 of the BERA. This field is populated with either a 0 or a 1. Records flagged with a 1 are

included in the Phase 2 SLERA dataset, and the concentration results found in the RESULT_VALUE field are used in the Phase 2 SLERA¹ (although note that both sets of results [0 and 1] are included in this file). As described in Section 4.3.4.2 of the BERA, for summed parameters, the Kaplan-Meier (KM) method totals calculated with non-detects reported at the RL are preferentially selected. Where KM RL totals are not available, totals calculated with non-detects reported at half the RL ($U = 1/2$) are selected.

- **BASELINE_RA_USABILITY** is a usability flag created to select the records used for the baseline risk analyses in Sections 6 through 11 of the BERA. This field is populated with either a 0 or a 1. Records flagged with a 1 are included in the dataset, and concentration results found in the RESULT_VALUE_MDL field are used for the baseline risk analyses in Sections 6 through 11 of the BERA (although note that both sets of results [0 and 1] are included in this file). As described in Section 4.3.4.2 of the BERA, for summed parameters, KM totals calculated with non-detects reported at the MDL are preferentially selected. Where KM MDL totals are not available, totals calculated with non-detects reported at zero ($U = 0$) are selected.
- **RESULT_VALUE_MDL** is a copy of the RESULT_VALUE field with non-detects replaced with the MDL, rather than the RL (see footnote 1).

1.2 Recommendations for Using the Study Area and Reference Area Data Files

- For analyses associated with the baseline risk analyses, only include records flagged with a 1 in the BASELINE_RA_USABILITY field and use the concentration results found in the RESULT_VALUE_MDL field. For analyses associated with the Phase 2 SLERA, only include records flagged with a 1 in the RISK_SCREEN_USABILITY field and use the concentration results found in the RESULT_VALUE field. The BASELINE_RA_USABILITY and RISK_SCREEN_USABILITY fields are not mutually

¹ In the RESULT_VALUE field, if DETECT_FLAG = "N," the value is the REPORTING_DETECTION_LIMIT, except for high-resolution methods (dioxin/furans, polychlorinated biphenyl congeners, radiochemistry, and pesticides by ASTM [ASTM International] E1699) for which RESULT_VALUE is set to the estimated METHOD_DETECTION_LIMIT. If the result is determined to be blank-contaminated (VALIDATOR_REASON_CODE contains "Cb", "Mb", or "7"), then DETECT_FLAG = "N" and RESULT_VALUE equals the maximum of the laboratory-reported result or the reporting limit.

exclusive. That is, filtering for the value 1 in the BASELINE_RA_USABILITY field is not equivalent to filtering for the value 0 in the RISK_SCREEN_USABILITY field.

- To calculate statistics for a summed parameter, we recommend grouping the data using the UCL_KEY1 field. The chemical name or Chemical Abstracts Service Registry Number (CAS RN) can be used to group data for individual chemicals but should not be used to group data for summed chemicals. For summed chemicals with a low frequency of detection, the method for the summing calculation can vary between samples. For example, for total chlordane for the baseline risk analyses, some total chlordane concentrations are calculated using the KM method, reported as “total chlordane (KM) (MDL),” and some are calculated as the sum of individual chlordane isomers with non-detect results set to 0, reported as “total chlordane (U = 0) (MDL).” To group the results for these totals, the chemical name and CAS RN are reported in the CHEMICAL_NAME_4PROUCL and CAS_RN_4PROUCL fields, respectively, and are consistently reported with KM MDL. For example, “total chlordane (KM) (MDL)” and “tChlordane_KM_MDL” are values in the fields CHEMICAL_NAME_4PROUCL and CAS_RN_4PROUCL, respectively. Because the CHEMICAL_NAME and CAS RN fields distinguish between the methods, they cannot be used to group the summed concentration results.
- For analyses associated with the Phase 2 SLERA, use the result values in the RESULT_VALUE field to obtain concentration results. Non-detects are reported at the RL or MDL in this field. Non-detect results with blank contamination are reported at the laboratory reported value.
- For analyses associated with the baseline risk analyses, use the result values in the RESULT_VALUE_MDL field to obtain concentration results. Non-detects are reported at the MDL in this field.

1.3 ProUCL Input File

1.3.1 Description

The ProUCL input file is provided in a flat file format and consists of the risk calculations for the media and exposure scenario of interest, as follows:

- Chemicals with less than four detected results in the Study Area are not included.
- The input files appended with “RL” only include results flagged with a 1 in the RISK_SCREEN_USABILITY field.
- The input files appended with “MDL” only include results flagged with a 1 in the BASELINE_RA_USABILITY field.

The fields created to facilitate data analyses in the Study Area data file (see Section 1.1) are also provided in this file. The following fields are used when calculating 95% UCLs with ProUCL for the risk screening assessment:

- **UCL_KEY1** contains a unique ID created to group data by chemical for calculation of 95% UCLs.
- **RESULT_VALUE** contains the concentration results with non-detects reported at the RL or MDL (see footnote 1).
- **D_RESULT_VALUE** supplies the detection flag information in a binary fashion for each result for use with ProUCL. Detected results are flagged as 1 and non-detect results are flagged as 0. This field is intended to be used when calculating 95% UCLs from the RESULT_VALUE field in ProUCL.

The following fields are used when calculating 95% UCLs with ProUCL for the baseline risk analyses:

- **UCL_KEY1** contains a unique ID created to group data by chemical for calculation of 95% UCLs.
- **RESULT_VALUE_MDL** is a copy of the RESULT_VALUE field with non-detects replaced with the MDL, rather than the RL.
- **D_RESULT_VALUE_MDL** supplies the detection flag information in a binary fashion for each result for use with ProUCL. Detected results are flagged as 1 and non-detect results are flagged as 0. This field is intended to be used when calculating 95% UCLs from the RESULT_VALUE_MDL field in ProUCL.

1.3.2 Recommendations for Using the Input File to Calculate 95% UCLs

- Group the data by chemical using the UCL_KEY1 field.
- For the Phase 2 SLERA, use the file appended with “RL” and the results in the RESULT_VALUE field.
- For the baseline risk analyses, use the file appended with “MDL” and the results in the RESULT_VALUE_MDL field.

1.4 ProUCL Output File

1.4.1 Description

The ProUCL output file contains two tabs. The first tab, labeled “Output,” contains a copy of the ProUCL output as it is provided by ProUCL. The second tab, labeled “Summary_Table,” provides the ProUCL output in a flat file format and contains each of the ProUCL output parameters in separate columns. The recommended statistics are reported in the right-most fields. In some cases, more than one statistic is suggested for use by ProUCL. All recommended 95% UCLs are summarized in the summary table (i.e., none are excluded, even if multiple statistics are recommended by ProUCL). The selection of exposure point concentrations for use in the BERA is described in Section 4.3.5 of the BERA.

1.4.2 Recommendations for Using the Output File

- The flat file format can be sorted and filtered to easily identify entries of interest.
- 95% UCLs are calculated for all chemicals with more than four detected results.

UCL Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	5/1/2017 11:32
From File	NCP1P2_SurfaceWater_wKM20161222_STUDY_AREA_161227_BASE.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

RESULT_VALUE_MDL (conventional parameters (mg/l)***alkalinity, total as calcium carbonate (caco3)***talk***mg/l***t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	58
		Number of Missing Observations	0
Minimum	72	Mean	106
Maximum	400	Median	100
SD	23.81	Std. Error of Mean	1.252
Coefficient of Variation	0.225	Skewness	8.005

Normal GOF Test

Shapiro Wilk Test Statistic	0.422	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.325	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	108	95% Adjusted-CLT UCL (Chen-1995)	108.6
		95% Modified-t UCL (Johnson-1978)	108.1

Gamma GOF Test

A-D Test Statistic	2.76E+28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.281	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics

k hat (MLE)	36.79	k star (bias corrected MLE)	36.49
Theta hat (MLE)	2.88	Theta star (bias corrected MLE)	2.904
nu hat (MLE)	26635	nu star (bias corrected)	26416
MLE Mean (bias corrected)	106	MLE Sd (bias corrected)	17.54
		Approximate Chi Square Value (0.05)	26039
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	26037

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	107.5	95% Adjusted Gamma UCL (use when n<50)	107.5
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.636	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.255	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			

Lognormal Statistics

Minimum of Logged Data	4.277	Mean of logged Data	4.649
Maximum of Logged Data	5.991	SD of logged Data	0.145

Assuming Lognormal Distribution

95% H-UCL	107	90% Chebyshev (MVUE) UCL	108.1
95% Chebyshev (MVUE) UCL	109.2	97.5% Chebyshev (MVUE) UCL	110.7
99% Chebyshev (MVUE) UCL	113.7		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	108	95% Jackknife UCL	108
95% Standard Bootstrap UCL	108	95% Bootstrap-t UCL	109
95% Hall's Bootstrap UCL	109.9	95% Percentile Bootstrap UCL	108.1
95% BCA Bootstrap UCL	108.6		
90% Chebyshev(Mean, Sd) UCL	109.7	95% Chebyshev(Mean, Sd) UCL	111.4
97.5% Chebyshev(Mean, Sd) UCL	113.8	99% Chebyshev(Mean, Sd) UCL	118.4

Suggested UCL to Use

95% Student's-t UCL	108	or 95% Modified-t UCL	108.1
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters (mg/l)***ammonia as nitrogen***7664-41-7n***mg/l****t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 265
Number of Detects	341	Number of Non-Detects 21
Number of Distinct Detects	264	Number of Distinct Non-Detects 1
Minimum Detect	0.033	Minimum Non-Detect 0.017
Maximum Detect	4.22	Maximum Non-Detect 0.017
Variance Detects	0.142	Percent Non-Detects 5.80%
Mean Detects	0.513	SD Detects 0.376
Median Detects	0.469	CV Detects 0.734
Skewness Detects	5.218	Kurtosis Detects 39.5
Mean of Logged Detects	-0.84	SD of Logged Detects 0.619
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.613	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.203	Lilliefors GOF Test
5% Lilliefors Critical Value	0.048	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.484	Standard Error of Mean 0.0201
SD	0.383	95% KM (BCA) UCL 0.519
95% KM (t) UCL	0.517	95% KM (Percentile Bootstrap) UCL 0.519
95% KM (z) UCL	0.517	95% KM Bootstrap t UCL 0.523
90% KM Chebyshev UCL	0.544	95% KM Chebyshev UCL 0.572
97.5% KM Chebyshev UCL	0.61	99% KM Chebyshev UCL 0.684
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	10.47	Anderson-Darling GOF Test
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.116	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0496	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.064	k star (bias corrected MLE) 3.039
Theta hat (MLE)	0.167	Theta star (bias corrected MLE) 0.169
nu hat (MLE)	2090	nu star (bias corrected) 2073
MLE Mean (bias corrected)	0.513	MLE Sd (bias corrected) 0.294
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.598	nu hat (KM) 1157
Approximate Chi Square Value (N/A, α)	1079	Adjusted Chi Square Value (N/A, β) 1079
95% Gamma Approximate KM-UCL (use when n>=50)	0.519	95% Gamma Adjusted KM-UCL (use when n<50) 0.519
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.485
Maximum	4.22	Median 0.461
SD	0.382	CV 0.788
k hat (MLE)	1.965	k star (bias corrected MLE) 1.951
Theta hat (MLE)	0.247	Theta star (bias corrected MLE) 0.249
nu hat (MLE)	1423	nu star (bias corrected) 1412
MLE Mean (bias corrected)	0.485	MLE Sd (bias corrected) 0.347
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1326	Adjusted Chi Square Value (N/A, β) 1326
95% Gamma Approximate UCL (use when n>=50)	0.517	95% Gamma Adjusted UCL (use when n<50) 0.517
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.145	Lilliefors GOF Test
5% Lilliefors Critical Value	0.048	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.49	Mean in Log Scale -0.916
SD in Original Scale	0.377	SD in Log Scale 0.676
95% t UCL (assumes normality of ROS data)	0.523	95% Percentile Bootstrap UCL 0.525
95% BCA Bootstrap UCL	0.53	95% Bootstrap t UCL 0.528

95% H-UCL (Log ROS)	0.538	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.483	Mean in Log Scale -1.068
SD in Original Scale	0.384	SD in Log Scale 1.098
95% t UCL (Assumes normality)	0.517	95% H-Stat UCL 0.714
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.519

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters (mg/l))***ammonia unionized***7664-41-7ui***mg/l***t)

General Statistics		
Total Number of Observations	335	Number of Distinct Observations 246
Number of Detects	314	Number of Non-Detects 21
Number of Distinct Detects	245	Number of Distinct Non-Detects 1
Minimum Detect	3.70E-02	Minimum Non-Detect 1.70E-02
Maximum Detect	4.22	Maximum Non-Detect 0.017
Variance Detects	1.16E-01	Percent Non-Detects 6.27%
Mean Detects	0.509	SD Detects 0.34
Median Detects	0.477	CV Detects 0.669
Skewness Detects	5.806	Kurtosis Detects 53.12
Mean of Logged Detects	-0.822	SD of Logged Detects 0.574

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.633
5% Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.185
5% Lilliefors Critical Value	0.05
Detected Data Not Normal at 5% Significance Level	
Normal GOF Test on Detected Observations Only	
Detected Data Not Normal at 5% Significance Level	
Lilliefors GOF Test	
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.478	Standard Error of Mean 1.92E-02
SD	0.35	95% KM (BCA) UCL 0.513
95% KM (t) UCL	0.51	95% KM (Percentile Bootstrap) UCL 0.511
95% KM (z) UCL	0.51	95% KM Bootstrap t UCL 0.516
90% KM Chebyshev UCL	0.536	95% KM Chebyshev UCL 0.562
97.5% KM Chebyshev UCL	0.598	99% KM Chebyshev UCL 0.669

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	8.697	Anderson-Darling GOF Test
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.118	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0514	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	3.56	k star (bias corrected MLE) 3.528
Theta hat (MLE)	0.143	Theta star (bias corrected MLE) 0.144
nu hat (MLE)	2235	nu star (bias corrected) 2215
MLE Mean (bias corrected)	0.509	MLE Sd (bias corrected) 0.271

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.867	nu hat (KM) 1251
Approximate Chi Square Value (N/A, α)	1170	Adjusted Chi Square Value (N/A, β) 1169
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.511	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.512

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.00E-02	Mean 0.481
Maximum	4.22	Median 0.464
SD	0.347	CV 0.721
k hat (MLE)	2.372	k star (bias corrected MLE) 2.353
Theta hat (MLE)	0.203	Theta star (bias corrected MLE) 0.204
nu hat (MLE)	1589	nu star (bias corrected) 1577
MLE Mean (bias corrected)	0.481	MLE Sd (bias corrected) 0.314

Approximate Chi Square Value (N/A, α)		1485	Adjusted Level of Significance (β)	0.0493
95% Gamma Approximate UCL (use when n>=50)		0.511	Adjusted Chi Square Value (N/A, β)	1485
			95% Gamma Adjusted UCL (use when n<50)	0.511
Lognormal GOF Test on Detected Observations Only				
Lilliefors Test Statistic		0.145	Lilliefors GOF Test	
5% Lilliefors Critical Value		0.05	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level				
Lognormal ROS Statistics Using Imputed Non-Detects				
Mean in Original Scale		0.486	Mean in Log Scale	-0.898
SD in Original Scale		0.342	SD in Log Scale	0.63
95% t UCL (assumes normality of ROS data)		0.516	95% Percentile Bootstrap UCL	0.519
95% BCA Bootstrap UCL		0.519	95% Bootstrap t UCL	0.524
95% H-UCL (Log ROS)		0.53		
DL/2 Statistics				
DL/2 Normal			DL/2 Log-Transformed	
Mean in Original Scale		0.478	Mean in Log Scale	-1.07
SD in Original Scale		0.351	SD in Log Scale	1.107
95% t UCL (Assumes normality)		0.509	95% H-Stat UCL	0.724
DL/2 is not a recommended method, provided for comparisons and historical reasons				
Nonparametric Distribution Free UCL Statistics				
Data do not follow a Discernible Distribution at 5% Significance Level				
Suggested UCL to Use				
95% KM (BCA) UCL		0.513		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.				
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).				
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.				
RESULT_VALUE_MDL (conventional parameters (mg/l)***biochemical oxygen demand (bod-30)***bod_30***mg/l***t)				
General Statistics				
Total Number of Observations		362	Number of Distinct Observations	274
Number of Detects		361	Number of Non-Detects	1
Number of Distinct Detects		273	Number of Distinct Non-Detects	1
Minimum Detect		2.83	Minimum Non-Detect	6
Maximum Detect		77.4	Maximum Non-Detect	6
Variance Detects		53.81	Percent Non-Detects	0.28%
Mean Detects		10.66	SD Detects	7.335
Median Detects		8.8	CV Detects	0.688
Skewness Detects		3.477	Kurtosis Detects	22.75
Mean of Logged Detects		2.201	SD of Logged Detects	0.555
Normal GOF Test on Detects Only				
Shapiro Wilk Test Statistic		0.763	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value		0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic		0.154	Lilliefors GOF Test	
5% Lilliefors Critical Value		0.0466	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level				
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs				
Mean		1.06E+01	Standard Error of Mean	39%
SD		7.322	95% KM (BCA) UCL	11.28
95% KM (t) UCL		11.28	95% KM (Percentile Bootstrap) UCL	11.32
95% KM (z) UCL		11.28	95% KM Bootstrap t UCL	11.36
90% KM Chebyshev UCL		11.8	95% KM Chebyshev UCL	12.32
97.5% KM Chebyshev UCL		13.05	99% KM Chebyshev UCL	14.48
Gamma GOF Tests on Detected Observations Only				
A-D Test Statistic		3.576	Anderson-Darling GOF Test	
5% A-D Critical Value		0.76	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic		0.074	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value		0.0482	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level				
Gamma Statistics on Detected Data Only				
k hat (MLE)		3.185	k star (bias corrected MLE)	3.16
Theta hat (MLE)		3.347	Theta star (bias corrected MLE)	3.373
nu hat (MLE)		2299	nu star (bias corrected)	2281
MLE Mean (bias corrected)		10.66	MLE Sd (bias corrected)	5.997
Gamma Kaplan-Meier (KM) Statistics				
k hat (KM)		2.113	nu hat (KM)	1530
Approximate Chi Square Value (N/A, α)		1440	Adjusted Chi Square Value (N/A, β)	1440

95% Gamma Approximate KM-UCL (use when n>=50)	11.31	95% Gamma Adjusted KM-UCL (use when n<50)	11.31
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Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	2.83	Mean	10.64
Maximum	77.4	Median	8.795
SD	7.334	CV	0.689
k hat (MLE)	3.172	k star (bias corrected MLE)	3.147
Theta hat (MLE)	3.355	Theta star (bias corrected MLE)	3.381
nu hat (MLE)	2296	nu star (bias corrected)	2279
MLE Mean (bias corrected)	10.64	MLE Sd (bias corrected)	5.998
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2169	Adjusted Chi Square Value (N/A, β)	2168
95% Gamma Approximate UCL (use when n>=50)	11.18	95% Gamma Adjusted UCL (use when n<50)	11.18

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic 0.0532 Lilliefors GOF Test

5% Lilliefors Critical Value 0.0466 Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	10.64	Mean in Log Scale	2.2
SD in Original Scale	7.331	SD in Log Scale	0.555
95% t UCL (assumes normality of ROS data)	11.28	95% Percentile Bootstrap UCL	11.31
95% BCA Bootstrap UCL	11.33	95% Bootstrap t UCL	11.32
95% H-UCL (Log ROS)	11.1		

DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	10.64	Mean in Log Scale	2.198
SD in Original Scale	7.336	SD in Log Scale	0.557
95% t UCL (Assumes normality)	11.27	95% H-Stat UCL	11.1
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	11.28

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters (mg/l)***biochemical oxygen demand (bod-5)***bod_5***mg/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	190
Number of Detects	221	Number of Non-Detects	141
Number of Distinct Detects	188	Number of Distinct Non-Detects	2
Minimum Detect	2.01	Minimum Non-Detect	2
Maximum Detect	49.7	Maximum Non-Detect	6
Variance Detects	26.84	Percent Non-Detects	38.95%
Mean Detects	5.505	SD Detects	5.181
Median Detects	4.42	CV Detects	0.941
Skewness Detects	5.233	Kurtosis Detects	35.12
Mean of Logged Detects	1.506	SD of Logged Detects	0.569

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic 0.546 Normal GOF Test on Detected Observations Only

5% Shapiro Wilk P Value 0 Detected Data Not Normal at 5% Significance Level

Lilliefors Test Statistic 0.25 Lilliefors GOF Test

5% Lilliefors Critical Value 0.0596 Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.165	Standard Error of Mean	0.231
SD	4.38	95% KM (BCA) UCL	4.581
95% KM (t) UCL	4.546	95% KM (Percentile Bootstrap) UCL	4.554
95% KM (z) UCL	4.545	95% KM Bootstrap t UCL	4.642
90% KM Chebyshev UCL	4.858	95% KM Chebyshev UCL	5.172
97.5% KM Chebyshev UCL	5.608	99% KM Chebyshev UCL	6.464

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic 5.516 Anderson-Darling GOF Test

5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.117	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0618	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.655	k star (bias corrected MLE) 2.622
Theta hat (MLE)	2.073	Theta star (bias corrected MLE) 2.1
nu hat (MLE)	1174	nu star (bias corrected) 1159
MLE Mean (bias corrected)	5.505	MLE Sd (bias corrected) 3.4
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.904	nu hat (KM) 654.6
Approximate Chi Square Value (654.58, α)	596.2	Adjusted Chi Square Value (654.58, β) 596
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	4.573	95% Gamma Adjusted KM-UCL (use when $n < 50$) 4.574
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 3.418
Maximum	49.7	Median 2.585
SD	4.834	CV 1.414
k hat (MLE)	0.351	k star (bias corrected MLE) 0.35
Theta hat (MLE)	9.741	Theta star (bias corrected MLE) 9.771
nu hat (MLE)	254.1	nu star (bias corrected) 253.3
MLE Mean (bias corrected)	3.418	MLE Sd (bias corrected) 5.779
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (253.29, α)	217.4	Adjusted Chi Square Value (253.29, β) 217.3
95% Gamma Approximate UCL (use when $n \geq 50$)	3.982	95% Gamma Adjusted UCL (use when $n < 50$) 3.984
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0777	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0596	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3.88	Mean in Log Scale 0.988
SD in Original Scale	4.546	SD in Log Scale 0.843
95% t UCL (assumes normality of ROS data)	4.274	95% Percentile Bootstrap UCL 4.274
95% BCA Bootstrap UCL	4.344	95% Bootstrap t UCL 4.345
95% H-UCL (Log ROS)	4.187	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	3.811	Mean in Log Scale 0.953
SD in Original Scale	4.581	SD in Log Scale 0.844
95% t UCL (Assumes normality)	4.208	95% H-Stat UCL 4.045
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	4.581	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (conventional parameters (mg/l)***bromide***24959-67-9***mg/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 78
		Number of Missing Observations 0
Minimum	11.2	Mean 37.76
Maximum	93	Median 38
SD	7.005	Std. Error of Mean 0.368
Coefficient of Variation	0.185	Skewness 1.584
Normal GOF Test		
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.104	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	38.37	95% Adjusted-CLT UCL (Chen-1995)	38.4
		95% Modified-t UCL (Johnson-1978)	38.38
Gamma GOF Test			
A-D Test Statistic	2.62	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0796	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	30.52	k star (bias corrected MLE)	30.27
Theta hat (MLE)	1.237	Theta star (bias corrected MLE)	1.248
nu hat (MLE)	22097	nu star (bias corrected)	21915
MLE Mean (bias corrected)	37.76	MLE Sd (bias corrected)	6.864
		Approximate Chi Square Value (0.05)	21572
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	21570
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	38.37	95% Adjusted Gamma UCL (use when n<50)	38.37
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.967	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.77E-05	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0813	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.416	Mean of logged Data	3.615
Maximum of Logged Data	4.533	SD of logged Data	0.183
Assuming Lognormal Distribution			
95% H-UCL	38.39	90% Chebyshev (MVUE) UCL	38.88
95% Chebyshev (MVUE) UCL	39.38	97.5% Chebyshev (MVUE) UCL	40.07
99% Chebyshev (MVUE) UCL	41.43		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	38.37	95% Jackknife UCL	38.37
95% Standard Bootstrap UCL	38.39	95% Bootstrap-t UCL	38.43
95% Hall's Bootstrap UCL	38.42	95% Percentile Bootstrap UCL	38.37
95% BCA Bootstrap UCL	38.39		
90% Chebyshev(Mean, Sd) UCL	38.87	95% Chebyshev(Mean, Sd) UCL	39.37
97.5% Chebyshev(Mean, Sd) UCL	40.06	99% Chebyshev(Mean, Sd) UCL	41.43
Suggested UCL to Use			
95% Student's-t UCL	38.37	or 95% Modified-t UCL	38.38

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters (mg/l)***chloride***16887-00-6***mg/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	49
		Number of Missing Observations	0
Minimum	4570	Mean	13108
Maximum	19000	Median	13000
SD	1787	Std. Error of Mean	93.94
Coefficient of Variation	0.136	Skewness	-0.531
Normal GOF Test			
Shapiro Wilk Test Statistic	0.952	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	9.45E-13	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.143	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	

95% Student's-t UCL	13263	95% Adjusted-CLT UCL (Chen-1995) 95% Modified-t UCL (Johnson-1978)	13259 13262
Gamma GOF Test			
A-D Test Statistic	8.008	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.165	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	48.36	k star (bias corrected MLE)	47.96
Theta hat (MLE)	271	Theta star (bias corrected MLE)	273.3
nu hat (MLE)	35015	nu star (bias corrected)	34726
MLE Mean (bias corrected)	13108	MLE Sd (bias corrected)	1893
		Approximate Chi Square Value (0.05)	34294
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	34292
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	13273	95% Adjusted Gamma UCL (use when n<50)	13274
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.894	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.177	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	8.427	Mean of logged Data	9.471
Maximum of Logged Data	9.852	SD of logged Data	0.15
Assuming Lognormal Distribution			
95% H-UCL	13293	90% Chebyshev (MVUE) UCL	13430
95% Chebyshev (MVUE) UCL	13571	97.5% Chebyshev (MVUE) UCL	13767
99% Chebyshev (MVUE) UCL	14151		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	13262	95% Jackknife UCL	13263
95% Standard Bootstrap UCL	13262	95% Bootstrap-t UCL	13255
95% Hall's Bootstrap UCL	13248	95% Percentile Bootstrap UCL	13272
95% BCA Bootstrap UCL	13260		
90% Chebyshev(Mean, Sd) UCL	13390	95% Chebyshev(Mean, Sd) UCL	13517
97.5% Chebyshev(Mean, Sd) UCL	13694	99% Chebyshev(Mean, Sd) UCL	14042
Suggested UCL to Use			
95% Student's-t UCL	13263	or 95% Modified-t UCL	13262
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE_MDL (conventional parameters (mg/l))***cyanide***57-12-5***mg/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	20
Number of Detects	222	Number of Non-Detects	140
Number of Distinct Detects	20	Number of Distinct Non-Detects	3
Minimum Detect	0.001	Minimum Non-Detect	0.001
Maximum Detect	0.052	Maximum Non-Detect	0.003
Variance Detects	2.04E-05	Percent Non-Detects	38.67%
Mean Detects	0.00338	SD Detects	0.00452
Median Detects	0.002	CV Detects	1.338
Skewness Detects	7.752	Kurtosis Detects	72.71
Mean of Logged Detects	-5.929	SD of Logged Detects	0.56
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.365	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.326	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0595	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00246	Standard Error of Mean	1.96E-04
SD	0.00372	95% KM (BCA) UCL	0.00281
95% KM (t) UCL	0.00278	95% KM (Percentile Bootstrap) UCL	0.0028
95% KM (z) UCL	0.00278	95% KM Bootstrap t UCL	0.00301
90% KM Chebyshev UCL	0.00305	95% KM Chebyshev UCL	0.00331
97.5% KM Chebyshev UCL	0.00368	99% KM Chebyshev UCL	4.41E-03

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	22.78	Anderson-Darling GOF Test	
5% A-D Critical Value	0.765	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.274	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0618	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.248	k star (bias corrected MLE)	2.221
Theta hat (MLE)	0.0015	Theta star (bias corrected MLE)	0.00152
nu hat (MLE)	998.3	nu star (bias corrected)	986.1
MLE Mean (bias corrected)	0.00338	MLE Sd (bias corrected)	0.00227

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.438	nu hat (KM)	317.1
Approximate Chi Square Value (317.08, α)	276.8	Adjusted Chi Square Value (317.08, β)	276.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.00282	95% Gamma Adjusted KM-UCL (use when n<50)	0.00282

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.001	Mean	0.00594
Maximum	0.052	Median	0.004
SD	0.00479	CV	0.806
k hat (MLE)	1.869	k star (bias corrected MLE)	1.856
Theta hat (MLE)	0.00318	Theta star (bias corrected MLE)	0.0032
nu hat (MLE)	1353	nu star (bias corrected)	1344
MLE Mean (bias corrected)	0.00594	MLE Sd (bias corrected)	0.00436
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1259	Adjusted Chi Square Value (N/A, β)	1259
95% Gamma Approximate UCL (use when n>=50)	0.00634	95% Gamma Adjusted UCL (use when n<50)	0.00634

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.281	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0595	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00239	Mean in Log Scale	-6.417
SD in Original Scale	0.00376	SD in Log Scale	0.801
95% t UCL (assumes normality of ROS data)	0.00271	95% Percentile Bootstrap UCL	0.00273
95% BCA Bootstrap UCL	0.00283	95% Bootstrap t UCL	0.00295
95% H-UCL (Log ROS)	0.00245		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00239	Mean in Log Scale	-6.398
SD in Original Scale	0.00375	SD in Log Scale	0.765
95% t UCL (Assumes normality)	0.00272	95% H-Stat UCL	0.00241
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	0.00281		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters (mg/l)***hardness as ca and mg***hardca_mg***mg/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	27
		Number of Missing Observations	0

Minimum	2300	Mean	4076
Maximum	5400	Median	4100
SD	424.9	Std. Error of Mean	23.22
Coefficient of Variation	0.104	Skewness	-0.692
Normal GOF Test			
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	4.66E-15	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.136	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0484	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	4114	95% Adjusted-CLT UCL (Chen-1995)	4113
		95% Modified-t UCL (Johnson-1978)	4114
Gamma GOF Test			
A-D Test Statistic	6.933	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.153	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0495	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	85.14	k star (bias corrected MLE)	84.38
Theta hat (MLE)	47.88	Theta star (bias corrected MLE)	48.31
nu hat (MLE)	57042	nu star (bias corrected)	56532
MLE Mean (bias corrected)	4076	MLE Sd (bias corrected)	443.7
		Approximate Chi Square Value (0.05)	55980
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	55978
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	4116	95% Adjusted Gamma UCL (use when n<50)	4116
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.161	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0484	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.741	Mean of logged Data	8.307
Maximum of Logged Data	8.594	SD of logged Data	0.111
Assuming Lognormal Distribution			
95% H-UCL	4119	90% Chebyshev (MVUE) UCL	4152
95% Chebyshev (MVUE) UCL	4186	97.5% Chebyshev (MVUE) UCL	4233
99% Chebyshev (MVUE) UCL	4325		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	4114	95% Jackknife UCL	4114
95% Standard Bootstrap UCL	4114	95% Bootstrap-t UCL	4113
95% Hall's Bootstrap UCL	4114	95% Percentile Bootstrap UCL	4113
95% BCA Bootstrap UCL	4115		
90% Chebyshev(Mean, Sd) UCL	4146	95% Chebyshev(Mean, Sd) UCL	4177
97.5% Chebyshev(Mean, Sd) UCL	4221	99% Chebyshev(Mean, Sd) UCL	4307
Suggested UCL to Use			
95% Student's-t UCL	4114	or 95% Modified-t UCL	4114
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE_MDL (conventional parameters (mg/l)***hardness as caco3***hardca***mg/l***t)			
General Statistics			
Total Number of Observations	27	Number of Distinct Observations	17
		Number of Missing Observations	0

Minimum	1600	Mean	3185
Maximum	4100	Median	3200
SD	752.8	Std. Error of Mean	144.9
Coefficient of Variation	0.236	Skewness	-0.392
Normal GOF Test			
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.154	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171	Data appear Normal at 5% Significance Level	
Data appear Approximate Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3432	95% Adjusted-CLT UCL (Chen-1995)	
		95% Modified-t UCL (Johnson-1978)	
Gamma GOF Test			
A-D Test Statistic	0.753	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.744	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.167	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	16.58	k star (bias corrected MLE)	
Theta hat (MLE)	192.1	Theta star (bias corrected MLE)	
nu hat (MLE)	895.2	nu star (bias corrected)	
MLE Mean (bias corrected)	3185	MLE Sd (bias corrected)	
		Approximate Chi Square Value (0.05)	
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	3466	95% Adjusted Gamma UCL (use when n<50)	
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.166	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.378	Mean of logged Data	
Maximum of Logged Data	8.319	SD of logged Data	
Assuming Lognormal Distribution			
95% H-UCL	3503	90% Chebyshev (MVUE) UCL	
95% Chebyshev (MVUE) UCL	3898	97.5% Chebyshev (MVUE) UCL	
99% Chebyshev (MVUE) UCL	4804		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3423	95% Jackknife UCL	
95% Standard Bootstrap UCL	3418	95% Bootstrap-t UCL	
95% Hall's Bootstrap UCL	3416	95% Percentile Bootstrap UCL	
95% BCA Bootstrap UCL	3404		
90% Chebyshev(Mean, Sd) UCL	3620	95% Chebyshev(Mean, Sd) UCL	
97.5% Chebyshev(Mean, Sd) UCL	4090	99% Chebyshev(Mean, Sd) UCL	
Suggested UCL to Use			
95% Student's-t UCL	3432		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE_MDL (conventional parameters (mg/l)***nitrate + nitrite as nitrogen***no2no3***mg/l****t)			
General Statistics			
Total Number of Observations	361	Number of Distinct Observations	
Number of Detects	329	Number of Non-Detects	
Number of Distinct Detects	74	Number of Distinct Non-Detects	

Minimum Detect	0.02	Minimum Non-Detect	0.015
Maximum Detect	3.8	Maximum Non-Detect	0.02
Variance Detects	0.0926	Percent Non-Detects	8.86%
Mean Detects	0.403	SD Detects	0.304
Median Detects	0.4	CV Detects	0.754
Skewness Detects	6.522	Kurtosis Detects	64.27
Mean of Logged Detects	-1.116	SD of Logged Detects	0.736
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.595	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.186	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0488	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.369	Standard Error of Mean	0.0164
SD	0.31	95% KM (BCA) UCL	0.399
95% KM (t) UCL	0.396	95% KM (Percentile Bootstrap) UCL	0.397
95% KM (z) UCL	0.396	95% KM Bootstrap t UCL	0.403
90% KM Chebyshev UCL	0.418	95% KM Chebyshev UCL	0.44
97.5% KM Chebyshev UCL	0.471	99% KM Chebyshev UCL	0.532
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	9.681	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.116	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0506	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.553	k star (bias corrected MLE)	2.532
Theta hat (MLE)	0.158	Theta star (bias corrected MLE)	0.159
nu hat (MLE)	1680	nu star (bias corrected)	1666
MLE Mean (bias corrected)	0.403	MLE Sd (bias corrected)	0.254
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.414	nu hat (KM)	1021
Approximate Chi Square Value (N/A, α)	947.8	Adjusted Chi Square Value (N/A, β)	947.5
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.398	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.398
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.372
Maximum	3.8	Median	0.37
SD	0.307	CV	0.825
k hat (MLE)	1.797	k star (bias corrected MLE)	1.784
Theta hat (MLE)	0.207	Theta star (bias corrected MLE)	0.209
nu hat (MLE)	1297	nu star (bias corrected)	1288
MLE Mean (bias corrected)	0.372	MLE Sd (bias corrected)	0.279
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1205	Adjusted Chi Square Value (N/A, β)	1205
95% Gamma Approximate UCL (use when $n \geq 50$)	0.398	95% Gamma Adjusted UCL (use when $n < 50$)	0.398
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.152	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0488	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.375	Mean in Log Scale	-1.244
SD in Original Scale	0.305	SD in Log Scale	0.818
95% t UCL (assumes normality of ROS data)	0.401	95% Percentile Bootstrap UCL	0.404
95% BCA Bootstrap UCL	0.406	95% Bootstrap t UCL	0.411
95% H-UCL (Log ROS)	0.438		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.369	Mean in Log Scale	-1.437
SD in Original Scale	0.311	SD in Log Scale	1.249
95% t UCL (Assumes normality)	0.396	95% H-Stat UCL	0.604
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (BCA) UCL	0.399	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (conventional parameters (mg/l)***nitrogen (total kjeldahl) as nitrogen***kn***mg/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 105
Number of Detects	321	Number of Non-Detects 41
Number of Distinct Detects	102	Number of Distinct Non-Detects 3
Minimum Detect	0.324	Minimum Non-Detect 0.093
Maximum Detect	5.4	Maximum Non-Detect 0.102
Variance Detects	0.276	Percent Non-Detects 11.33%
Mean Detects	1.159	SD Detects 0.525
Median Detects	1	CV Detects 0.453
Skewness Detects	2.981	Kurtosis Detects 16.13
Mean of Logged Detects	0.0725	SD of Logged Detects 0.37
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.795	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.174	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0495	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1.038	Standard Error of Mean 0.0315
SD	0.598	95% KM (BCA) UCL 1.089
95% KM (t) UCL	1.09	95% KM (Percentile Bootstrap) UCL 1.091
95% KM (z) UCL	1.09	95% KM Bootstrap t UCL 1.095
90% KM Chebyshev UCL	1.132	95% KM Chebyshev UCL 1.175
97.5% KM Chebyshev UCL	1.235	99% KM Chebyshev UCL 1.351
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.759	Anderson-Darling GOF Test
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.132	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0507	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	6.848	k star (bias corrected MLE) 6.786
Theta hat (MLE)	0.169	Theta star (bias corrected MLE) 0.171
nu hat (MLE)	4396	nu star (bias corrected) 4357
MLE Mean (bias corrected)	1.159	MLE Sd (bias corrected) 0.445
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	3.011	nu hat (KM) 2180
Approximate Chi Square Value (N/A, α)	2072	Adjusted Chi Square Value (N/A, β) 2072
95% Gamma Approximate KM-UCL (use when n>=50)	1.092	95% Gamma Adjusted KM-UCL (use when n<50) 1.092
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 1.06
Maximum	5.4	Median 0.96
SD	0.567	CV 0.535
k hat (MLE)	3.471	k star (bias corrected MLE) 3.444
Theta hat (MLE)	0.305	Theta star (bias corrected MLE) 0.308
nu hat (MLE)	2513	nu star (bias corrected) 2494
MLE Mean (bias corrected)	1.06	MLE Sd (bias corrected) 0.571
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2379	Adjusted Chi Square Value (N/A, β) 2378
95% Gamma Approximate UCL (use when n>=50)	1.112	95% Gamma Adjusted UCL (use when n<50) 1.112
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.105	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0495	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.081	Mean in Log Scale -0.0222
SD in Original Scale	0.541	SD in Log Scale 0.441

95% t UCL (assumes normality of ROS data)	1.128	95% Percentile Bootstrap UCL	1.129
95% BCA Bootstrap UCL	1.134	95% Bootstrap t UCL	1.134
95% H-UCL (Log ROS)	1.123		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.033	Mean in Log Scale	-0.275
SD in Original Scale	0.607	SD in Log Scale	1.035
95% t UCL (Assumes normality)	1.086	95% H-Stat UCL	1.459
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	1.089		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (conventional parameters (mg/l)***particulate organic carbon (poc)***poc***mg/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	135
Number of Detects	182	Number of Non-Detects	180
Number of Distinct Detects	134	Number of Distinct Non-Detects	3
Minimum Detect	1	Minimum Non-Detect	1
Maximum Detect	9.26	Maximum Non-Detect	1.3
Variance Detects	1.441	Percent Non-Detects	49.72%
Mean Detects	2.275	SD Detects	1.2
Median Detects	2.025	CV Detects	0.528
Skewness Detects	2.238	Kurtosis Detects	8.364
Mean of Logged Detects	0.713	SD of Logged Detects	0.453
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.827	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.144	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0657	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.641	Standard Error of Mean	0.0559
SD	1.062	95% KM (BCA) UCL	1.736
95% KM (t) UCL	1.734	95% KM (Percentile Bootstrap) UCL	1.73
95% KM (z) UCL	1.733	95% KM Bootstrap t UCL	1.741
90% KM Chebyshev UCL	1.809	95% KM Chebyshev UCL	1.885
97.5% KM Chebyshev UCL	1.991	99% KM Chebyshev UCL	2.198
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.606	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0784	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0685	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	4.758	k star (bias corrected MLE)	4.683
Theta hat (MLE)	0.478	Theta star (bias corrected MLE)	0.486
nu hat (MLE)	1732	nu star (bias corrected)	1705
MLE Mean (bias corrected)	2.275	MLE Sd (bias corrected)	1.051
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.39	nu hat (KM)	1731
Approximate Chi Square Value (N/A, α)	1635	Adjusted Chi Square Value (N/A, β)	1635
95% Gamma Approximate KM-UCL (use when n>=50)	1.737	95% Gamma Adjusted KM-UCL (use when n<50)	1.738
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.255
Maximum	9.26	Median	1
SD	1.347	CV	1.073
k hat (MLE)	0.495	k star (bias corrected MLE)	0.493
Theta hat (MLE)	2.534	Theta star (bias corrected MLE)	2.546

nu hat (MLE)	358.6	nu star (bias corrected)	357
MLE Mean (bias corrected)	1.255	MLE Sd (bias corrected)	1.787
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (356.99, α)	314.2	Adjusted Chi Square Value (356.99, β)	314
95% Gamma Approximate UCL (use when $n \geq 50$)	1.426	95% Gamma Adjusted UCL (use when $n < 50$)	1.427

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.0577 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0657 Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.478	Mean in Log Scale	0.118
SD in Original Scale	1.183	SD in Log Scale	0.747
95% t UCL (assumes normality of ROS data)	1.58	95% Percentile Bootstrap UCL	1.588
95% BCA Bootstrap UCL	1.592	95% Bootstrap t UCL	1.59
95% H-UCL (Log ROS)	1.606		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	0.359	95% H-UCL (KM -Log)	1.68
KM SD (logged)	0.479	95% Critical H Value (KM-Log)	1.784
KM Standard Error of Mean (logged)	0.0253		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.393	Mean in Log Scale	0.0152
SD in Original Scale	1.229	SD in Log Scale	0.773
95% t UCL (Assumes normality)	1.5	95% H-Stat UCL	1.482
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	1.734	95% KM (% Bootstrap) UCL	1.73

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters (mg/l)***phosphorus***7723-14-0***mg/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	204
		Number of Missing Observations	0
Minimum	0.092	Mean	0.241
Maximum	1.24	Median	0.213
SD	0.119	Std. Error of Mean	0.00625
Coefficient of Variation	0.494	Skewness	3.591

Normal GOF Test	
Shapiro Wilk Test Statistic	0.75 Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.143 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466 Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level	

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.251	95% Adjusted-CLT UCL (Chen-1995)	0.252
		95% Modified-t UCL (Johnson-1978)	0.251

Gamma GOF Test	
A-D Test Statistic	5.533 Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.756 Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.089 Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0479 Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics			
k hat (MLE)	6.209	k star (bias corrected MLE)	6.16
Theta hat (MLE)	0.0388	Theta star (bias corrected MLE)	0.0391
nu hat (MLE)	4496	nu star (bias corrected)	4460
MLE Mean (bias corrected)	0.241	MLE Sd (bias corrected)	0.097
		Approximate Chi Square Value (0.05)	4306
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	4305

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.249	95% Adjusted Gamma UCL (use when n<50)	0.249
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.959	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.37E-08	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0702	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.386	Mean of logged Data	-1.507
Maximum of Logged Data	0.215	SD of logged Data	0.384
Assuming Lognormal Distribution			
95% H-UCL	0.247	90% Chebyshev (MVUE) UCL	0.253
95% Chebyshev (MVUE) UCL	0.26	97.5% Chebyshev (MVUE) UCL	0.27
99% Chebyshev (MVUE) UCL	0.288		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.251	95% Jackknife UCL	0.251
95% Standard Bootstrap UCL	0.251	95% Bootstrap-t UCL	0.253
95% Hall's Bootstrap UCL	0.253	95% Percentile Bootstrap UCL	0.251
95% BCA Bootstrap UCL	0.252		
90% Chebyshev(Mean, Sd) UCL	0.259	95% Chebyshev(Mean, Sd) UCL	0.268
97.5% Chebyshev(Mean, Sd) UCL	0.28	99% Chebyshev(Mean, Sd) UCL	0.303
Suggested UCL to Use			
95% Student's-t UCL	0.251	or 95% Modified-t UCL	0.251
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (conventional parameters (mg/l)***sulfate***14808-79-8***mg/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	55
		Number of Missing Observations	0
Minimum	762	Mean	1792
Maximum	2600	Median	1800
SD	321.5	Std. Error of Mean	16.9
Coefficient of Variation	0.179	Skewness	-0.128
Normal GOF Test			
Shapiro Wilk Test Statistic	0.968	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	6.57E-05	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.105	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1820	95% Adjusted-CLT UCL (Chen-1995)	1820
		95% Modified-t UCL (Johnson-1978)	1820
Gamma GOF Test			
A-D Test Statistic	3.694	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.112	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	29.49	k star (bias corrected MLE)	29.25
Theta hat (MLE)	60.78	Theta star (bias corrected MLE)	61.29
nu hat (MLE)	21350	nu star (bias corrected)	21174
MLE Mean (bias corrected)	1792	MLE Sd (bias corrected)	331.4
		Approximate Chi Square Value (0.05)	20837
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	20835
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1821	95% Adjusted Gamma UCL (use when n<50)	1822

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.954	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.31E-11	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.117	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.636	Mean of logged Data	7.474
Maximum of Logged Data	7.863	SD of logged Data	0.189
Assuming Lognormal Distribution			
95% H-UCL	1824	90% Chebyshev (MVUE) UCL	1847
95% Chebyshev (MVUE) UCL	1872	97.5% Chebyshev (MVUE) UCL	1906
99% Chebyshev (MVUE) UCL	1972		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1820	95% Jackknife UCL	1820
95% Standard Bootstrap UCL	1820	95% Bootstrap-t UCL	1821
95% Hall's Bootstrap UCL	1822	95% Percentile Bootstrap UCL	1819
95% BCA Bootstrap UCL	1820		
90% Chebyshev(Mean, Sd) UCL	1843	95% Chebyshev(Mean, Sd) UCL	1866
97.5% Chebyshev(Mean, Sd) UCL	1898	99% Chebyshev(Mean, Sd) UCL	1961
Suggested UCL to Use			
95% Student's-t UCL	1820	or 95% Modified-t UCL	1820
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE_MDL (conventional parameters (mg/l))***suspended sediment concentration - coarse fraction***sscc***mg/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	256
Number of Detects	338	Number of Non-Detects	24
Number of Distinct Detects	256	Number of Distinct Non-Detects	1
Minimum Detect	0	Minimum Non-Detect	0
Maximum Detect	166.4	Maximum Non-Detect	0.00E+00
Variance Detects	109.3	Percent Non-Detects	6.63%
Mean Detects	4.466	SD Detects	10.46
Median Detects	2.242	CV Detects	2.341
Skewness Detects	11.67	Kurtosis Detects	172.6
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.341	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.335	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0482	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.17	Standard Error of Mean	0.534
SD	10.15	95% KM (BCA) UCL	4.996
95% KM (t) UCL	5.051	95% KM (Percentile Bootstrap) UCL	5.166
95% KM (z) UCL	5.049	95% KM Bootstrap t UCL	5.756
90% KM Chebyshev UCL	5.772	95% KM Chebyshev UCL	6.498
97.5% KM Chebyshev UCL	7.506	99% KM Chebyshev UCL	9.485
Gamma Statistics on Detected Data Only			
Dataset Contains Values <= 0 - Cannot Compute Gamma Statistics!			
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.169	nu hat (KM)	122.2
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (122.22, α)	97.69	Adjusted Chi Square Value (122.22, β)	97.61
95% Gamma Approximate KM-UCL (use when n>=50)	5.217	95% Gamma Adjusted KM-UCL (use when n<50)	5.222
DL/2 Statistics			
Mean in Original Scale	4.17	SD in Original Scale	10.16
95% t UCL (Assumes normality)	5.051		
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
97.5% KM (Chebyshev) UCL7.506

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters (mg/l)***suspended sediment concentration - fine fraction***sscf***mg/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	319
		Number of Missing Observations	0
Minimum	1.15	Mean	9.717
Maximum	174.9	Median	6.75
SD	12.39	Std. Error of Mean	0.651
Coefficient of Variation	1.275	Skewness	8.715
Normal GOF Test			
Shapiro Wilk Test Statistic	0.449	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.265	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	10.79	95% Adjusted-CLT UCL (Chen-1995)	11.11
		95% Modified-t UCL (Johnson-1978)	10.84
Gamma GOF Test			
A-D Test Statistic	11.87	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.766	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.133	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0484	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2	k star (bias corrected MLE)	1.985
Theta hat (MLE)	4.859	Theta star (bias corrected MLE)	4.895
nu hat (MLE)	1448	nu star (bias corrected)	1437
MLE Mean (bias corrected)	9.717	MLE Sd (bias corrected)	6.897
		Approximate Chi Square Value (0.05)	1350
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1350
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	10.34	95% Adjusted Gamma UCL (use when n<50)	10.35
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.59E-07	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0724	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	0.14	Mean of logged Data	2.003
Maximum of Logged Data	5.164	SD of logged Data	0.651
Assuming Lognormal Distribution			
95% H-UCL	9.771	90% Chebyshev (MVUE) UCL	10.19
95% Chebyshev (MVUE) UCL	10.65	97.5% Chebyshev (MVUE) UCL	11.3
99% Chebyshev (MVUE) UCL	12.58		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	10.79	95% Jackknife UCL	10.79
95% Standard Bootstrap UCL	10.81	95% Bootstrap-t UCL	11.42
95% Hall's Bootstrap UCL	16.07	95% Percentile Bootstrap UCL	10.88
95% BCA Bootstrap UCL	11.11		
90% Chebyshev(Mean, Sd) UCL	11.67	95% Chebyshev(Mean, Sd) UCL	12.56
97.5% Chebyshev(Mean, Sd) UCL	13.79	99% Chebyshev(Mean, Sd) UCL	16.2

Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	12.56	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (conventional parameters (mg/l))***total organic carbon***toc***mg/l***t)		
General Statistics		
Total Number of Observations	358	Number of Distinct Observations 144
Number of Detects	308	Number of Non-Detects 50
Number of Distinct Detects	140	Number of Distinct Non-Detects 4
Minimum Detect	0.04	Minimum Non-Detect 0.03
Maximum Detect	23.3	Maximum Non-Detect 4.72
Variance Detects	7.382	Percent Non-Detects 13.97%
Mean Detects	2.872	SD Detects 2.717
Median Detects	2.36	CV Detects 0.946
Skewness Detects	2.67	Kurtosis Detects 12.84
Mean of Logged Detects	0.612	SD of Logged Detects 1.045
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.798	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.156	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0505	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2.525	Standard Error of Mean 0.142
SD	2.676	95% KM (BCA) UCL 2.777
95% KM (t) UCL	2.759	95% KM (Percentile Bootstrap) UCL 2.769
95% KM (z) UCL	2.759	95% KM Bootstrap t UCL 2.768
90% KM Chebyshev UCL	2.951	95% KM Chebyshev UCL 3.144
97.5% KM Chebyshev UCL	3.412	99% KM Chebyshev UCL 3.939
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.934	Anderson-Darling GOF Test
5% A-D Critical Value	0.778	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0686	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0528	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.268	k star (bias corrected MLE) 1.258
Theta hat (MLE)	2.265	Theta star (bias corrected MLE) 2.283
nu hat (MLE)	781.2	nu star (bias corrected) 774.9
MLE Mean (bias corrected)	2.872	MLE Sd (bias corrected) 2.561
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.89	nu hat (KM) 637.4
Approximate Chi Square Value (637.40, α)	579.8	Adjusted Chi Square Value (637.40, β) 579.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.776	95% Gamma Adjusted KM-UCL (use when $n < 50$) 2.777
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 2.516
Maximum	23.3	Median 2
SD	2.683	CV 1.066
k hat (MLE)	0.701	k star (bias corrected MLE) 0.697
Theta hat (MLE)	3.592	Theta star (bias corrected MLE) 3.612
nu hat (MLE)	501.6	nu star (bias corrected) 498.8
MLE Mean (bias corrected)	2.516	MLE Sd (bias corrected) 3.015
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (498.77, α)	448	Adjusted Chi Square Value (498.77, β) 447.8
95% Gamma Approximate UCL (use when $n \geq 50$)	2.802	95% Gamma Adjusted UCL (use when $n < 50$) 2.803
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.129	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0505	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.534	Mean in Log Scale 0.355

SD in Original Scale	2.664	SD in Log Scale	1.202
95% t UCL (assumes normality of ROS data)	2.766	95% Percentile Bootstrap UCL	2.76
95% BCA Bootstrap UCL	2.797	95% Bootstrap t UCL	2.785
95% H-UCL (Log ROS)	3.402		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.541	Mean in Log Scale	0.174
SD in Original Scale	2.667	SD in Log Scale	1.649
95% t UCL (Assumes normality)	2.773	95% H-Stat UCL	5.878
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	3.144		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (conventional parameters (mg/l)***total suspended solids***tss***mg/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	73
		Number of Missing Observations	0
Minimum	5.9	Mean	22.26
Maximum	110	Median	20
SD	12.11	Std. Error of Mean	0.637
Coefficient of Variation	0.544	Skewness	2.194
Normal GOF Test			
Shapiro Wilk Test Statistic	0.86	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.11	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	23.31	95% Adjusted-CLT UCL (Chen-1995)	23.38
		95% Modified-t UCL (Johnson-1978)	23.32
Gamma GOF Test			
A-D Test Statistic	2.23	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0778	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.048	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.882	k star (bias corrected MLE)	3.851
Theta hat (MLE)	5.734	Theta star (bias corrected MLE)	5.779
nu hat (MLE)	2810	nu star (bias corrected)	2788
MLE Mean (bias corrected)	22.26	MLE Sd (bias corrected)	11.34
		Approximate Chi Square Value (0.05)	2667
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2666
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	23.27	95% Adjusted Gamma UCL (use when n<50)	23.28
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.959	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.07E-08	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0952	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.775	Mean of logged Data	2.968
Maximum of Logged Data	4.7	SD of logged Data	0.528
Assuming Lognormal Distribution			
95% H-UCL	23.52	90% Chebyshev (MVUE) UCL	24.34
95% Chebyshev (MVUE) UCL	25.24	97.5% Chebyshev (MVUE) UCL	26.49
99% Chebyshev (MVUE) UCL	28.94		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs			
95% CLT UCL	23.3	95% Jackknife UCL	23.31
95% Standard Bootstrap UCL	23.3	95% Bootstrap-t UCL	23.37
95% Hall's Bootstrap UCL	23.36	95% Percentile Bootstrap UCL	23.32
95% BCA Bootstrap UCL	23.42		
90% Chebyshev(Mean, Sd) UCL	24.17	95% Chebyshev(Mean, Sd) UCL	25.03
97.5% Chebyshev(Mean, Sd) UCL	26.23	99% Chebyshev(Mean, Sd) UCL	28.59
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	25.03		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters, dissolved (mg/l)***cyanide***57-12-5***mg/l***d)

General Statistics			
Total Number of Observations	27	Number of Distinct Observations	6
Number of Detects	7	Number of Non-Detects	20
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	0.002	Minimum Non-Detect	0.001
Maximum Detect	0.008	Maximum Non-Detect	0.0013
Variance Detects	4.24E-06	Percent Non-Detects	74.07%
Mean Detects	0.00471	SD Detects	0.00206
Median Detects	0.004	CV Detects	0.437
Skewness Detects	0.694	Kurtosis Detects	-0.225
Mean of Logged Detects	-5.442	SD of Logged Detects	0.453

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.85	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.35	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data Not Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00196	Standard Error of Mean	3.94E-04
SD	0.0019	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.00263	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.00261	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.00314	95% KM Chebyshev UCL	0.00368
97.5% KM Chebyshev UCL	0.00442	99% KM Chebyshev UCL	5.88E-03

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.635	Anderson-Darling GOF Test	
5% A-D Critical Value	0.71	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.316	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.313	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	6.089	k star (bias corrected MLE)	3.575
Theta hat (MLE)	7.74E-04	Theta star (bias corrected MLE)	0.00132
nu hat (MLE)	85.25	nu star (bias corrected)	50.04
MLE Mean (bias corrected)	0.00471	MLE Sd (bias corrected)	0.00249

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.07E+00	nu hat (KM)	57.94
Approximate Chi Square Value (57.94, α)	41.44	Adjusted Chi Square Value (57.94, β)	40.55
95% Gamma Approximate KM-UCL (use when n>=50)	0.00274	95% Gamma Adjusted KM-UCL (use when n<50)	0.0028

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.002	Mean	0.00863
Maximum	0.01	Median	0.01
SD	0.00256	CV	0.297
k hat (MLE)	7.362	k star (bias corrected MLE)	6.569
Theta hat (MLE)	0.00117	Theta star (bias corrected MLE)	0.00131
nu hat (MLE)	397.6	nu star (bias corrected)	354.7
MLE Mean (bias corrected)	0.00863	MLE Sd (bias corrected)	0.00337

		Adjusted Level of Significance (β)	0.0401
Approximate Chi Square Value (354.73, α)	312.1	Adjusted Chi Square Value (354.73, β)	309.5
95% Gamma Approximate UCL (use when n>=50)	0.00981	95% Gamma Adjusted UCL (use when n<50)	0.00989
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.869	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.287	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00194	Mean in Log Scale	-6.687
SD in Original Scale	0.002	SD in Log Scale	0.969
95% t UCL (assumes normality of ROS data)	0.0026	95% Percentile Bootstrap UCL	0.00259
95% BCA Bootstrap UCL	0.00275	95% Bootstrap t UCL	0.00283
95% H-UCL (Log ROS)	0.0032		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-6.528	95% H-UCL (KM -Log)	0.00244
KM SD (logged)	0.677	95% Critical H Value (KM-Log)	2.137
KM Standard Error of Mean (logged)	0.141		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0016	Mean in Log Scale	-7.031
SD in Original Scale	0.00212	SD in Log Scale	0.984
95% t UCL (Assumes normality)	0.0023	95% H-Stat UCL	0.00232
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00263	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (conventional parameters, dissolved (mg/l)***nitrate + nitrite as nitrogen***no2no3***mg/l***d)			
General Statistics			
Total Number of Observations	361	Number of Distinct Observations	78
Number of Detects	323	Number of Non-Detects	38
Number of Distinct Detects	77	Number of Distinct Non-Detects	2
Minimum Detect	0.02	Minimum Non-Detect	0.015
Maximum Detect	2	Maximum Non-Detect	0.02
Variance Detects	0.04	Percent Non-Detects	10.53%
Mean Detects	0.409	SD Detects	0.2
Median Detects	0.42	CV Detects	0.488
Skewness Detects	1.687	Kurtosis Detects	12.41
Mean of Logged Detects	-1.054	SD of Logged Detects	0.671
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.914	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0864	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0493	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.368	Standard Error of Mean	0.0118
SD	0.224	95% KM (BCA) UCL	0.388
95% KM (t) UCL	0.387	95% KM (Percentile Bootstrap) UCL	0.387
95% KM (z) UCL	0.387	95% KM Bootstrap t UCL	0.388
90% KM Chebyshev UCL	0.403	95% KM Chebyshev UCL	0.419
97.5% KM Chebyshev UCL	0.442	99% KM Chebyshev UCL	0.485
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	9.426	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.134	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0508	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			

k hat (MLE)	3.272	k star (bias corrected MLE)	3.244
Theta hat (MLE)	0.125	Theta star (bias corrected MLE)	0.126
nu hat (MLE)	2114	nu star (bias corrected)	2096
MLE Mean (bias corrected)	0.409	MLE Sd (bias corrected)	0.227
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.689	nu hat (KM)	1942
Approximate Chi Square Value (N/A, α)	1840	Adjusted Chi Square Value (N/A, β)	1840
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.388	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.388
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.02	Mean	0.379
Maximum	2	Median	0.4
SD	0.209	CV	0.552
k hat (MLE)	2.678	k star (bias corrected MLE)	2.657
Theta hat (MLE)	0.141	Theta star (bias corrected MLE)	0.143
nu hat (MLE)	1933	nu star (bias corrected)	1919
MLE Mean (bias corrected)	0.379	MLE Sd (bias corrected)	0.232
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1818	Adjusted Chi Square Value (N/A, β)	1817
95% Gamma Approximate UCL (use when $n \geq 50$)	0.4	95% Gamma Adjusted UCL (use when $n < 50$)	0.4
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.169	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0493	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.377	Mean in Log Scale	-1.19
SD in Original Scale	0.212	SD in Log Scale	0.753
95% t UCL (assumes normality of ROS data)	0.395	95% Percentile Bootstrap UCL	0.396
95% BCA Bootstrap UCL	0.396	95% Bootstrap t UCL	0.395
95% H-UCL (Log ROS)	0.436		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.367	Mean in Log Scale	-1.44
SD in Original Scale	0.226	SD in Log Scale	1.296
95% t UCL (Assumes normality)	0.387	95% H-Stat UCL	0.645
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.388		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (conventional parameters, dissolved (mg/l)***nitrogen (total kjeldahl) as nitrogen***kn***mg/l****d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	84
Number of Detects	312	Number of Non-Detects	50
Number of Distinct Detects	83	Number of Distinct Non-Detects	1
Minimum Detect	0.2	Minimum Non-Detect	0.06
Maximum Detect	4.5	Maximum Non-Detect	0.06
Variance Detects	0.193	Percent Non-Detects	13.81%
Mean Detects	0.845	SD Detects	0.439
Median Detects	0.775	CV Detects	0.519
Skewness Detects	4.026	Kurtosis Detects	26.71
Mean of Logged Detects	-0.259	SD of Logged Detects	0.415
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.722	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.737	Standard Error of Mean	0.0257

SD	0.489	95% KM (BCA) UCL	0.782
95% KM (t) UCL	0.779	95% KM (Percentile Bootstrap) UCL	0.781
95% KM (z) UCL	0.779	95% KM Bootstrap t UCL	0.782
90% KM Chebyshev UCL	0.814	95% KM Chebyshev UCL	0.849
97.5% KM Chebyshev UCL	0.898	99% KM Chebyshev UCL	0.993

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.385	Anderson-Darling GOF Test	
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.109	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0514	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	5.638	k star (bias corrected MLE)	5.586
Theta hat (MLE)	0.15	Theta star (bias corrected MLE)	0.151
nu hat (MLE)	3518	nu star (bias corrected)	3486
MLE Mean (bias corrected)	0.845	MLE Sd (bias corrected)	0.358

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	2.274	nu hat (KM)	1646
Approximate Chi Square Value (N/A, α)	1553	Adjusted Chi Square Value (N/A, β)	1552
95% Gamma Approximate KM-UCL (use when n>=50)	0.781	95% Gamma Adjusted KM-UCL (use when n<50)	0.781

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.753
Maximum	4.5	Median	0.74
SD	0.47	CV	0.624
k hat (MLE)	2.462	k star (bias corrected MLE)	2.444
Theta hat (MLE)	0.306	Theta star (bias corrected MLE)	0.308
nu hat (MLE)	1783	nu star (bias corrected)	1769
MLE Mean (bias corrected)	0.753	MLE Sd (bias corrected)	0.482
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1673	Adjusted Chi Square Value (N/A, β)	1672
95% Gamma Approximate UCL (use when n>=50)	0.796	95% Gamma Adjusted UCL (use when n<50)	0.796

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0834	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.772	Mean in Log Scale	-0.385
SD in Original Scale	0.447	SD in Log Scale	0.503
95% t UCL (assumes normality of ROS data)	0.811	95% Percentile Bootstrap UCL	0.813
95% BCA Bootstrap UCL	0.814	95% Bootstrap t UCL	0.817
95% H-UCL (Log ROS)	0.81		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.733	Mean in Log Scale	-0.708
SD in Original Scale	0.495	SD in Log Scale	1.186
95% t UCL (Assumes normality)	0.776	95% H-Stat UCL	1.148

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	0.782
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters, dissolved (mg/l)***phosphorus***7723-14-0***mg/l***d)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	190
		Number of Missing Observations	0
Minimum	0.015	Mean	0.159
Maximum	0.981	Median	0.141
SD	0.106	Std. Error of Mean	0.00555

Coefficient of Variation	0.664	Skewness	3.516
Normal GOF Test			
Shapiro Wilk Test Statistic	0.74	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.171	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.168	95% Adjusted-CLT UCL (Chen-1995)	0.169
		95% Modified-t UCL (Johnson-1978)	0.168
Gamma GOF Test			
A-D Test Statistic	5.243	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0918	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0481	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.184	k star (bias corrected MLE)	3.159
Theta hat (MLE)	0.05	Theta star (bias corrected MLE)	0.0504
nu hat (MLE)	2305	nu star (bias corrected)	2287
MLE Mean (bias corrected)	0.159	MLE Sd (bias corrected)	0.0895
		Approximate Chi Square Value (0.05)	2177
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2177
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.167	95% Adjusted Gamma UCL (use when n<50)	0.167
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.938	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0835	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-4.2	Mean of logged Data	-2.004
Maximum of Logged Data	-0.0192	SD of logged Data	0.593
Assuming Lognormal Distribution			
95% H-UCL	0.17	90% Chebyshev (MVUE) UCL	0.177
95% Chebyshev (MVUE) UCL	0.184	97.5% Chebyshev (MVUE) UCL	0.194
99% Chebyshev (MVUE) UCL	0.215		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.168	95% Jackknife UCL	0.168
95% Standard Bootstrap UCL	0.168	95% Bootstrap-t UCL	0.17
95% Hall's Bootstrap UCL	0.17	95% Percentile Bootstrap UCL	0.168
95% BCA Bootstrap UCL	0.169		
90% Chebyshev(Mean, Sd) UCL	0.176	95% Chebyshev(Mean, Sd) UCL	0.183
97.5% Chebyshev(Mean, Sd) UCL	0.194	99% Chebyshev(Mean, Sd) UCL	0.214
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.183		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (conventional parameters, dissolved (mg/l)***total dissolved solids***tds***mg/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	15
		Number of Missing Observations	0
Minimum	8500	Mean	22427
Maximum	26000	Median	23000
SD	2293	Std. Error of Mean	120.5
Coefficient of Variation	0.102	Skewness	-1.918

Normal GOF Test

Shapiro Wilk Test Statistic	0.846	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.191	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	22626	95% Adjusted-CLT UCL (Chen-1995)	22612
		95% Modified-t UCL (Johnson-1978)	22624

Gamma GOF Test			
A-D Test Statistic	17.88	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.212	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	79.46	k star (bias corrected MLE)	78.81
Theta hat (MLE)	282.2	Theta star (bias corrected MLE)	284.6
nu hat (MLE)	57533	nu star (bias corrected)	57057
MLE Mean (bias corrected)	22427	MLE Sd (bias corrected)	2526
		Approximate Chi Square Value (0.05)	56503
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	56500

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	22647	95% Adjusted Gamma UCL (use when n<50)	22648

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.763	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.222	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	9.048	Mean of logged Data	10.01
Maximum of Logged Data	10.17	SD of logged Data	0.119

Assuming Lognormal Distribution			
95% H-UCL	22678	90% Chebyshev (MVUE) UCL	22865
95% Chebyshev (MVUE) UCL	23056	97.5% Chebyshev (MVUE) UCL	23322
99% Chebyshev (MVUE) UCL	23843		

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			

Nonparametric Distribution Free UCLs			
95% CLT UCL	22625	95% Jackknife UCL	22626
95% Standard Bootstrap UCL	22628	95% Bootstrap-t UCL	22614
95% Hall's Bootstrap UCL	22612	95% Percentile Bootstrap UCL	22627
95% BCA Bootstrap UCL	22610		
90% Chebyshev(Mean, Sd) UCL	22788	95% Chebyshev(Mean, Sd) UCL	22952
97.5% Chebyshev(Mean, Sd) UCL	23179	99% Chebyshev(Mean, Sd) UCL	23626

Suggested UCL to Use			
95% Student's-t UCL	22626	or 95% Modified-t UCL	22624

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

RESULT_VALUE_MDL (dioxin furans (ng/l)***total dioxin/furan teq 1998 (avian) (km) (mdl)***tdioxfur_b_km_mdl***ng/l***t)

General Statistics			
Total Number of Observations	123	Number of Distinct Observations	120
Number of Detects	48	Number of Non-Detects	75
Number of Distinct Detects	47	Number of Distinct Non-Detects	73
Minimum Detect	7.90E-07	Minimum Non-Detect	1.98E-04
Maximum Detect	0.00883	Maximum Non-Detect	0.00723
Variance Detects	1.66E-06	Percent Non-Detects	60.98%
Mean Detects	2.23E-04	SD Detects	0.00129
Median Detects	3.50E-06	CV Detects	5.776
Skewness Detects	6.67E+00	Kurtosis Detects	4.53E+01

Mean of Logged Detects	-12.09	SD of Logged Detects	1.759
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.183	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.505	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.128	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.59E-05	Standard Error of Mean	7.38E-05
SD	8.05E-04	95% KM (BCA) UCL	2.41E-04
95% KM (t) UCL	2.18E-04	95% KM (Percentile Bootstrap) UCL	2.41E-04
95% KM (z) UCL	2.17E-04	95% KM Bootstrap t UCL	0.00382
90% KM Chebyshev UCL	3.17E-04	95% KM Chebyshev UCL	4.17E-04
97.5% KM Chebyshev UCL	5.57E-04	99% KM Chebyshev UCL	8.30E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.36	Anderson-Darling GOF Test	
5% A-D Critical Value	0.912	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.391	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.142	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.2	k star (bias corrected MLE)	0.201
Theta hat (MLE)	0.00111	Theta star (bias corrected MLE)	0.00111
nu hat (MLE)	19.21	nu star (bias corrected)	19.34
MLE Mean (bias corrected)	2.23E-04	MLE Sd (bias corrected)	4.96E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.42E-02	nu hat (KM)	3.49E+00
Approximate Chi Square Value (3.49, α)	0.531	Adjusted Chi Square Value (3.49, β)	0.519
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.30E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	6.45E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.90E-07	Mean	0.00618
Maximum	0.01	Median	0.01
SD	0.00486	CV	0.785
k hat (MLE)	0.285	k star (bias corrected MLE)	0.284
Theta hat (MLE)	2.17E-02	Theta star (bias corrected MLE)	0.0218
nu hat (MLE)	70.12	nu star (bias corrected)	69.75
MLE Mean (bias corrected)	0.00618	MLE Sd (bias corrected)	0.0116
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (69.75, α)	51.52	Adjusted Chi Square Value (69.75, β)	51.34
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00837	95% Gamma Adjusted UCL (use when $n < 50$)	0.0084
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.792	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.174	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.128	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	9.00E-05	Mean in Log Scale	-12.17
SD in Original Scale	8.06E-04	SD in Log Scale	1.101
95% t UCL (assumes normality of ROS data)	2.10E-04	95% Percentile Bootstrap UCL	2.33E-04
95% BCA Bootstrap UCL	3.64E-04	95% Bootstrap t UCL	0.0089
95% H-UCL (Log ROS)	1.20E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.52E-04	Mean in Log Scale	-9.205
SD in Original Scale	9.39E-04	SD in Log Scale	2.603
95% t UCL (Assumes normality)	6.93E-04	95% H-Stat UCL	0.00762
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	4.17E-04		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (dioxin furans (ng/l)***total dioxin/furan teq 1998 (fish) (km) (mdl)***dioxfurf_km_mdl***ng/l***t)

General Statistics		
Total Number of Observations	123	Number of Distinct Observations 119
Number of Detects	48	Number of Non-Detects 75
Number of Distinct Detects	47	Number of Distinct Non-Detects 72
Minimum Detect	7.90E-07	Minimum Non-Detect 1.86E-04
Maximum Detect	0.00825	Maximum Non-Detect 0.00549
Variance Detects	1.45E-06	Percent Non-Detects 60.98%
Mean Detects	2.11E-04	SD Detects 0.0012
Median Detects	3.50E-06	CV Detects 5.715
Skewness Detects	6.638	Kurtosis Detects 44.96
Mean of Logged Detects	-12.09	SD of Logged Detects 1.753
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	1.86E-01	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	5.05E-01	Lilliefors GOF Test
5% Lilliefors Critical Value	0.128	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	9.07E-05	Standard Error of Mean 6.90E-05
SD	7.53E-04	95% KM (BCA) UCL 2.37E-04
95% KM (t) UCL	2.05E-04	95% KM (Percentile Bootstrap) UCL 2.24E-04
95% KM (z) UCL	2.04E-04	95% KM Bootstrap t UCL 0.00362
90% KM Chebyshev UCL	2.98E-04	95% KM Chebyshev UCL 3.91E-04
97.5% KM Chebyshev UCL	5.22E-04	99% KM Chebyshev UCL 7.77E-04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	11.27	Anderson-Darling GOF Test
5% A-D Critical Value	9.10E-01	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	3.89E-01	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.142	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.203	k star (bias corrected MLE) 0.204
Theta hat (MLE)	0.00104	Theta star (bias corrected MLE) 0.00103
nu hat (MLE)	19.46	nu star (bias corrected) 19.58
MLE Mean (bias corrected)	2.11E-04	MLE Sd (bias corrected) 4.66E-04
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0145	nu hat (KM) 3.563
Approximate Chi Square Value (3.56, α)	0.557	Adjusted Chi Square Value (3.56, β) 0.544
95% Gamma Approximate KM-UCL (use when n>=50)	5.80E-04	95% Gamma Adjusted KM-UCL (use when n<50) 5.93E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	7.90E-07	Mean 0.00618
Maximum	0.01	Median 0.01
SD	0.00485	CV 0.785
k hat (MLE)	0.285	k star (bias corrected MLE) 0.284
Theta hat (MLE)	0.0217	Theta star (bias corrected MLE) 0.0218
nu hat (MLE)	70.13	nu star (bias corrected) 69.75
MLE Mean (bias corrected)	0.00618	MLE Sd (bias corrected) 0.0116
		Adjusted Level of Significance (β) 0.048
Approximate Chi Square Value (69.75, α)	5.15E+01	Adjusted Chi Square Value (69.75, β) 51.34
95% Gamma Approximate UCL (use when n>=50)	0.00837	95% Gamma Adjusted UCL (use when n<50) 0.0084
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.794	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.174	Lilliefors GOF Test
5% Lilliefors Critical Value	0.128	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	8.52E-05	Mean in Log Scale -12.17
SD in Original Scale	7.54E-04	SD in Log Scale 1.1

95% t UCL (assumes normality of ROS data)	1.98E-04	95% Percentile Bootstrap UCL	2.19E-04
95% BCA Bootstrap UCL	3.42E-04	95% Bootstrap t UCL	0.00845
95% H-UCL (Log ROS)	1.19E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.26E-04	Mean in Log Scale	-9.229
SD in Original Scale	8.69E-04	SD in Log Scale	2.586
95% t UCL (Assumes normality)	6.56E-04	95% H-Stat UCL	0.00704
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	3.91E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (dioxin furans (ng/l)***total dioxin/furan teq 2005 (mammal) (km) (mdl)***tdioxfurm_km_mdl***ng/l***t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	120
Number of Detects	48	Number of Non-Detects	75
Number of Distinct Detects	48	Number of Distinct Non-Detects	72
Minimum Detect	2.37E-06	Minimum Non-Detect	1.86E-04
Maximum Detect	0.00737	Maximum Non-Detect	0.00599
Variance Detects	1.16E-06	Percent Non-Detects	60.98%
Mean Detects	1.99E-04	SD Detects	0.00108
Median Detects	1.25E-05	CV Detects	5.41
Skewness Detects	6.575	Kurtosis Detects	44.27
Mean of Logged Detects	-11.11	SD of Logged Detects	1.38
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.191	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.503	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.128	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.10E-05	Standard Error of Mean	6.20E-05
SD	6.76E-04	95% KM (BCA) UCL	1.97E-04
95% KM (t) UCL	1.94E-04	95% KM (Percentile Bootstrap) UCL	2.10E-04
95% KM (z) UCL	1.93E-04	95% KM Bootstrap t UCL	0.00272
90% KM Chebyshev UCL	2.77E-04	95% KM Chebyshev UCL	3.61E-04
97.5% KM Chebyshev UCL	4.78E-04	99% KM Chebyshev UCL	7.08E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.7	Anderson-Darling GOF Test	
5% A-D Critical Value	0.877	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.43	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.14	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.271	k star (bias corrected MLE)	0.268
Theta hat (MLE)	7.37E-04	Theta star (bias corrected MLE)	7.45E-04
nu hat (MLE)	25.97	nu star (bias corrected)	25.68
MLE Mean (bias corrected)	1.99E-04	MLE Sd (bias corrected)	3.85E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0181	nu hat (KM)	4.456
Approximate Chi Square Value (4.46, α)	0.91	Adjusted Chi Square Value (4.46, β)	0.892
95% Gamma Approximate KM-UCL (use when n>=50)	4.46E-04	95% Gamma Adjusted KM-UCL (use when n<50)	4.55E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.37E-06	Mean	6.18E-03
Maximum	0.01	Median	0.01
SD	0.00485	CV	0.785
k hat (MLE)	0.33	k star (bias corrected MLE)	0.327

Theta hat (MLE)	0.0187	Theta star (bias corrected MLE)	0.0189
nu hat (MLE)	81.17	nu star (bias corrected)	80.52
MLE Mean (bias corrected)	0.00618	MLE Sd (bias corrected)	0.0108
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (80.52, α)	60.85	Adjusted Chi Square Value (80.52, β)	60.65
95% Gamma Approximate UCL (use when n>=50)	0.00817	95% Gamma Adjusted UCL (use when n<50)	0.0082

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	7.63E-01	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.182	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.128	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	8.61E-05	Mean in Log Scale	-11.17
SD in Original Scale	6.75E-04	SD in Log Scale	0.866
95% t UCL (assumes normality of ROS data)	1.87E-04	95% Percentile Bootstrap UCL	2.05E-04
95% BCA Bootstrap UCL	3.14E-04	95% Bootstrap t UCL	0.00608
95% H-UCL (Log ROS)	2.40E-05		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.38E-04	Mean in Log Scale	-8.821
SD in Original Scale	8.12E-04	SD in Log Scale	2.083
95% t UCL (Assumes normality)	6.59E-04	95% H-Stat UCL	0.00243

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	1.97E-04
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (dioxin furans (ng/l)***total heptachlorodibenzofuran (hpcdf)***38998-75-3***ng/l****)

General Statistics

Total Number of Observations	123	Number of Distinct Observations	114
Number of Detects	51	Number of Non-Detects	72
Number of Distinct Detects	50	Number of Distinct Non-Detects	67
Minimum Detect	6.33E-04	Minimum Non-Detect	2.18E-04
Maximum Detect	0.0866	Maximum Non-Detect	0.00571
Variance Detects	1.45E-04	Percent Non-Detects	58.54%
Mean Detects	0.00471	SD Detects	0.012
Median Detects	0.00227	CV Detects	2.554
Skewness Detects	6.565	Kurtosis Detects	45.13
Mean of Logged Detects	-6	SD of Logged Detects	0.888

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.291	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.367	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.124	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.00222	Standard Error of Mean	7.27E-04
SD	7.97E-03	95% KM (BCA) UCL	3.74E-03
95% KM (t) UCL	0.00342	95% KM (Percentile Bootstrap) UCL	0.00359
95% KM (z) UCL	3.41E-03	95% KM Bootstrap t UCL	0.61%
90% KM Chebyshev UCL	0.0044	95% KM Chebyshev UCL	0.00539
97.5% KM Chebyshev UCL	0.00676	99% KM Chebyshev UCL	0.00945

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.029	Anderson-Darling GOF Test	
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.209	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.128	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.908	k star (bias corrected MLE)	0.868
Theta hat (MLE)	0.00519	Theta star (bias corrected MLE)	0.00543
nu hat (MLE)	92.66	nu star (bias corrected)	8.85E+01

MLE Mean (bias corrected)		0.00471	MLE Sd (bias corrected)	0.00506
Gamma Kaplan-Meier (KM) Statistics				
k hat (KM)	0.0776	nu hat (KM)		19.09
Approximate Chi Square Value (19.09, α)		10.18	Adjusted Chi Square Value (19.09, β)	
95% Gamma Approximate KM-UCL (use when n>=50)		0.00416	95% Gamma Adjusted KM-UCL (use when n<50)	
Gamma (KM) may not be used when k hat (KM) is < 0.1				
Gamma ROS Statistics using Imputed Non-Detects				
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs				
GROS may not be used when kstar of detected data is small such as < 0.1				
For such situations, GROS method tends to yield inflated values of UCLs and BTVs				
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates				
Minimum	6.33E-04	Mean		0.00781
Maximum	0.0866	Median		0.01
SD	0.00814	CV		1.042
k hat (MLE)	1.658	k star (bias corrected MLE)		1.623
Theta hat (MLE)	0.00471	Theta star (bias corrected MLE)		0.00481
nu hat (MLE)	407.8	nu star (bias corrected)		399.2
MLE Mean (bias corrected)	0.00781	MLE Sd (bias corrected)		0.00613
		Adjusted Level of Significance (β)		0.048
Approximate Chi Square Value (399.20, α)		353.9	Adjusted Chi Square Value (399.20, β)	
95% Gamma Approximate UCL (use when n>=50)		0.00881	95% Gamma Adjusted UCL (use when n<50)	
Lognormal GOF Test on Detected Observations Only				
Lilliefors Test Statistic	0.0907	Lilliefors GOF Test		
5% Lilliefors Critical Value	0.124	Detected Data appear Lognormal at 5% Significance Level		
Detected Data appear Approximate Lognormal at 5% Significance Level				
Lognormal ROS Statistics Using Imputed Non-Detects				
Mean in Original Scale	0.00219	Mean in Log Scale		-7.11
SD in Original Scale	0.008	SD in Log Scale		1.128
95% t UCL (assumes normality of ROS data)	0.00338	95% Percentile Bootstrap UCL		0.00356
95% BCA Bootstrap UCL	0.0044	95% Bootstrap t UCL		0.00632
95% H-UCL (Log ROS)	0.00195			
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed				
KM Mean (logged)	-7.204	95% H-UCL (KM -Log)		0.00226
KM SD (logged)	1.284	95% Critical H Value (KM-Log)		2.457
KM Standard Error of Mean (logged)	0.13			
DL/2 Statistics				
DL/2 Normal		DL/2 Log-Transformed		
Mean in Original Scale	0.00239	Mean in Log Scale		-6.873
SD in Original Scale	0.00796	SD in Log Scale		1.111
95% t UCL (Assumes normality)	0.00358	95% H-Stat UCL		0.00242
DL/2 is not a recommended method, provided for comparisons and historical reasons				
Nonparametric Distribution Free UCL Statistics				
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level				
Suggested UCL to Use				
95% KM (t) UCL	0.00342	95% KM (% Bootstrap) UCL		0.00359
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.				
Recommendations are based upon data size, data distribution, and skewness.				
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).				
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.				
RESULT_VALUE_MDL (dioxin furans (ng/l)***total heptachlorodibenzo-p-dioxin (hpcdd)***37871-00-4***ng/l***t)				
General Statistics				
Total Number of Observations	123	Number of Distinct Observations		116
Number of Detects	56	Number of Non-Detects		67
Number of Distinct Detects	54	Number of Distinct Non-Detects		65
Minimum Detect	0.00143	Minimum Non-Detect		2.73E-04
Maximum Detect	0.0635	Maximum Non-Detect		0.00692
Variance Detects	7.18E-05	Percent Non-Detects		54.47%
Mean Detects	0.0069	SD Detects		0.00847
Median Detects	0.00538	CV Detects		1.229
Skewness Detects	5.695	Kurtosis Detects		37.39
Mean of Logged Detects	-5.242	SD of Logged Detects		0.636
Normal GOF Test on Detects Only				
Shapiro Wilk Test Statistic	0.455	Normal GOF Test on Detected Observations Only		
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.285	Lilliefors GOF Test		
5% Lilliefors Critical Value	0.118	Detected Data Not Normal at 5% Significance Level		
Detected Data Not Normal at 5% Significance Level				

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00343	Standard Error of Mean	5.96E-04
SD	0.00652	95% KM (BCA) UCL	0.0046
95% KM (t) UCL	4.41E-03	95% KM (Percentile Bootstrap) UCL	0.45%
95% KM (z) UCL	0.00441	95% KM Bootstrap t UCL	0.00513
90% KM Chebyshev UCL	0.00521	95% KM Chebyshev UCL	0.00602
97.5% KM Chebyshev UCL	0.00715	99% KM Chebyshev UCL	0.00935

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.435	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.191	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.12	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.037	k star (bias corrected MLE)	1.939
Theta hat (MLE)	0.00339	Theta star (bias corrected MLE)	3.56E-03
nu hat (MLE)	228.1	nu star (bias corrected)	217.2
MLE Mean (bias corrected)	0.0069	MLE Sd (bias corrected)	0.00495

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.276	nu hat (KM)	67.96
Approximate Chi Square Value (67.96, α)	49.98	Adjusted Chi Square Value (67.96, β)	49.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.00466	95% Gamma Adjusted KM-UCL (use when n<50)	0.00468

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00143	Mean	0.00859
Maximum	0.0635	Median	0.01
SD	0.0059	CV	0.687
k hat (MLE)	3.793	k star (bias corrected MLE)	3.706
Theta hat (MLE)	0.00226	Theta star (bias corrected MLE)	0.00232
nu hat (MLE)	933.1	nu star (bias corrected)	911.6
MLE Mean (bias corrected)	0.00859	MLE Sd (bias corrected)	0.00446
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (911.63, α)	842.6	Adjusted Chi Square Value (911.63, β)	841.8
95% Gamma Approximate UCL (use when n>=50)	0.00929	95% Gamma Adjusted UCL (use when n<50)	0.0093

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.123	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00378	Mean in Log Scale	-6.065
SD in Original Scale	0.00637	SD in Log Scale	0.875
95% t UCL (assumes normality of ROS data)	0.00474	95% Percentile Bootstrap UCL	0.00484
95% BCA Bootstrap UCL	0.00533	95% Bootstrap t UCL	0.00561
95% H-UCL (Log ROS)	0.00402		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00372	Mean in Log Scale	-6.29
SD in Original Scale	0.00642	SD in Log Scale	1.236
95% t UCL (Assumes normality)	0.00467	95% H-Stat UCL	0.00521
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	0.00441	95% KM (% Bootstrap) UCL	0.00446

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (dioxin furans (ng/l)***total hexachlorodibenzofuran (hxcdf)***55684-94-1***ng/l***t)

General Statistics			
Total Number of Observations	123	Number of Distinct Observations	118
Number of Detects	30	Number of Non-Detects	93
Number of Distinct Detects	29	Number of Distinct Non-Detects	90

Minimum Detect	4.44E-04	Minimum Non-Detect	1.53E-04
Maximum Detect	0.0801	Maximum Non-Detect	0.00342
Variance Detects	2.13E-04	Percent Non-Detects	75.61%
Mean Detects	0.00576	SD Detects	0.0146
Median Detects	0.00126	CV Detects	2.53
Skewness Detects	4.891	Kurtosis Detects	25.35
Mean of Logged Detects	-6.213	SD of Logged Detects	1.253
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.371	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.927	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.358	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.162	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.60E-03	Standard Error of Mean	6.85E-04
SD	0.00747	95% KM (BCA) UCL	0.00306
95% KM (t) UCL	2.74E-03	95% KM (Percentile Bootstrap) UCL	0.29%
95% KM (z) UCL	0.00273	95% KM Bootstrap t UCL	0.0054
90% KM Chebyshev UCL	0.00366	95% KM Chebyshev UCL	0.00459
97.5% KM Chebyshev UCL	0.00588	99% KM Chebyshev UCL	0.00842
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.6	Anderson-Darling GOF Test	
5% A-D Critical Value	0.802	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.236	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.168	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.587	k star (bias corrected MLE)	0.55
Theta hat (MLE)	0.00982	Theta star (bias corrected MLE)	1.05E-02
nu hat (MLE)	35.19	nu star (bias corrected)	33.01
MLE Mean (bias corrected)	0.00576	MLE Sd (bias corrected)	0.00777
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0461	nu hat (KM)	11.35
Approximate Chi Square Value (11.35, α)	4.803	Adjusted Chi Square Value (11.35, β)	4.752
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00379	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00383
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	4.44E-04	Mean	0.00897
Maximum	0.0801	Median	0.01
SD	0.00734	CV	0.819
k hat (MLE)	1.916	k star (bias corrected MLE)	1.874
Theta hat (MLE)	0.00468	Theta star (bias corrected MLE)	0.00478
nu hat (MLE)	471.2	nu star (bias corrected)	461.1
MLE Mean (bias corrected)	0.00897	MLE Sd (bias corrected)	0.00655
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (461.09, α)	412.3	Adjusted Chi Square Value (461.09, β)	411.8
95% Gamma Approximate UCL (use when $n \geq 50$)	0.01	95% Gamma Adjusted UCL (use when $n < 50$)	0.01
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.891	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.927	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.195	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.162	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00147	Mean in Log Scale	-8.71
SD in Original Scale	0.00752	SD in Log Scale	1.588
95% t UCL (assumes normality of ROS data)	0.00259	95% Percentile Bootstrap UCL	0.00273
95% BCA Bootstrap UCL	0.00383	95% Bootstrap t UCL	0.00515
95% H-UCL (Log ROS)	8.67E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00182	Mean in Log Scale	-7.376
SD in Original Scale	0.00746	SD in Log Scale	1.086
95% t UCL (Assumes normality)	0.00293	95% H-Stat UCL	0.00141
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL 0.00306

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (dioxin furans (ng/l)***total hexachlorodibenzo-p-dioxin (hxcdd)***34465-46-8***ng/l***t)

General Statistics			
Total Number of Observations	123	Number of Distinct Observations	112
Number of Detects	14	Number of Non-Detects	109
Number of Distinct Detects	14	Number of Distinct Non-Detects	99
Minimum Detect	8.50E-04	Minimum Non-Detect	1.80E-04
Maximum Detect	0.015	Maximum Non-Detect	0.00441
Variance Detects	2.45E-05	Percent Non-Detects	88.62%
Mean Detects	0.00376	SD Detects	0.00495
Median Detects	0.00116	CV Detects	1.318
Skewness Detects	1.771	Kurtosis Detects	1.884
Mean of Logged Detects	-6.21	SD of Logged Detects	1.064

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.64 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.874 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.334 Lilliefors GOF Test
5% Lilliefors Critical Value	0.237 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	6.61E-04	Standard Error of Mean	1.87E-04
SD	0.00197	95% KM (BCA) UCL	0.0011
95% KM (t) UCL	9.72E-04	95% KM (Percentile Bootstrap) UCL	0.10%
95% KM (z) UCL	9.69E-04	95% KM Bootstrap t UCL	0.00116
90% KM Chebyshev UCL	0.00122	95% KM Chebyshev UCL	0.00148
97.5% KM Chebyshev UCL	0.00183	99% KM Chebyshev UCL	0.00252

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	1.741 Anderson-Darling GOF Test
5% A-D Critical Value	0.763 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.337 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.236 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.93	k star (bias corrected MLE)	0.778
Theta hat (MLE)	4.04E-03	Theta star (bias corrected MLE)	4.83E-03
nu hat (MLE)	26.04	nu star (bias corrected)	21.8
MLE Mean (bias corrected)	0.00376	MLE Sd (bias corrected)	0.00426

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.113	nu hat (KM)	27.72
Approximate Chi Square Value (27.72, α)	16.71	Adjusted Chi Square Value (27.72, β)	16.61
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0011	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0011

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	8.50E-04	Mean	0.00929
Maximum	0.015	Median	0.01
SD	0.00256	CV	27.60%
k hat (MLE)	4.75	k star (bias corrected MLE)	4.639
Theta hat (MLE)	0.00196	Theta star (bias corrected MLE)	0.002
nu hat (MLE)	1168	nu star (bias corrected)	1141
MLE Mean (bias corrected)	0.00929	MLE Sd (bias corrected)	0.00431
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (N/A, α)	1064	Adjusted Chi Square Value (N/A, β)	1063
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00997	95% Gamma Adjusted UCL (use when $n < 50$)	0.00997

Lognormal GOF Test on Detected Observations Only	
Shapiro Wilk Test Statistic	0.769 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.874 Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.304 Lilliefors GOF Test
5% Lilliefors Critical Value	0.237 Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.96E-04	Mean in Log Scale	-9.171
SD in Original Scale	0.002	SD in Log Scale	1.179
95% t UCL (assumes normality of ROS data)	7.95E-04	95% Percentile Bootstrap UCL	8.12E-04
95% BCA Bootstrap UCL	9.31E-04	95% Bootstrap t UCL	0.00121
95% H-UCL (Log ROS)	2.68E-04		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00105	Mean in Log Scale	-7.319
SD in Original Scale	0.00194	SD in Log Scale	0.793
95% t UCL (Assumes normality)	0.00134	95% H-Stat UCL	0.00105
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.0011

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (dioxin furans (ng/l)***total pentachlorodibenzofuran (pecdf)***30402-15-4***ng/l***t)

General Statistics			
Total Number of Observations	123	Number of Distinct Observations	118
Number of Detects	9	Number of Non-Detects	114
Number of Distinct Detects	9	Number of Distinct Non-Detects	109
Minimum Detect	0.00229	Minimum Non-Detect	1.50E-04
Maximum Detect	0.0591	Maximum Non-Detect	0.00338
Variance Detects	3.28E-04	Percent Non-Detects	92.68%
Mean Detects	0.0116	SD Detects	0.0181
Median Detects	0.00545	CV Detects	1.554
Skewness Detects	2.815	Kurtosis Detects	8.143
Mean of Logged Detects	-5.05	SD of Logged Detects	1.011

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.551	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.368	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.92E-04	Standard Error of Mean	5.26E-04
SD	0.0055	95% KM (BCA) UCL	0.0019
95% KM (t) UCL	1.86E-03	95% KM (Percentile Bootstrap) UCL	0.19%
95% KM (z) UCL	0.00186	95% KM Bootstrap t UCL	0.00406
90% KM Chebyshev UCL	0.00257	95% KM Chebyshev UCL	0.00329
97.5% KM Chebyshev UCL	0.00428	99% KM Chebyshev UCL	0.00623

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.892	Anderson-Darling GOF Test	
5% A-D Critical Value	0.744	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.255	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.287	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.97	k star (bias corrected MLE)	0.721
Theta hat (MLE)	0.012	Theta star (bias corrected MLE)	1.62E-02
nu hat (MLE)	17.46	nu star (bias corrected)	12.97
MLE Mean (bias corrected)	0.0116	MLE Sd (bias corrected)	0.0137

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0325	nu hat (KM)	7.998
Approximate Chi Square Value (8.00, α)	2.734	Adjusted Chi Square Value (8.00, β)	2.698
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0029	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00294
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00229	Mean	0.0101
Maximum	0.0591	Median	0.01
SD	0.00466	CV	0.46
k hat (MLE)	11.39	k star (bias corrected MLE)	11.12
Theta hat (MLE)	8.88E-04	Theta star (bias corrected MLE)	9.10E-04
nu hat (MLE)	2803	nu star (bias corrected)	2736
MLE Mean (bias corrected)	0.0101	MLE Sd (bias corrected)	0.30%
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (N/A, α)	2615	Adjusted Chi Square Value (N/A, β)	2614
95% Gamma Approximate UCL (use when n>=50)	0.0106	95% Gamma Adjusted UCL (use when n<50)	0.0106
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.882	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.188	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	8.68E-04	Mean in Log Scale	-10.61
SD in Original Scale	5.54E-03	SD in Log Scale	1.63E+00
95% t UCL (assumes normality of ROS data)	0.0017	95% Percentile Bootstrap UCL	0.00183
95% BCA Bootstrap UCL	0.00246	95% Bootstrap t UCL	0.00415
95% H-UCL (Log ROS)	1.40E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.529	95% H-UCL (KM -Log)	4.04E-04
KM SD (logged)	1.012	95% Critical H Value (KM-Log)	2.198
KM Standard Error of Mean (logged)	0.097		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00123	Mean in Log Scale	-7.768
SD in Original Scale	0.00549	SD in Log Scale	0.987
95% t UCL (Assumes normality)	0.00205	95% H-Stat UCL	8.36E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00186	95% GROS Approximate Gamma UCL	0.0106
95% Approximate Gamma KM-UCL	0.0029		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (dioxin furans (ng/l)***total tetrachlorodibenzofuran (tcdf)***30402-14-3***ng/l***t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	113
Number of Detects	9	Number of Non-Detects	114
Number of Distinct Detects	9	Number of Distinct Non-Detects	105
Minimum Detect	0.00131	Minimum Non-Detect	1.98E-04
Maximum Detect	0.0202	Maximum Non-Detect	0.00383
Variance Detects	5.06E-05	Percent Non-Detects	92.68%
Mean Detects	0.00799	SD Detects	0.00711
Median Detects	0.00596	CV Detects	0.89
Skewness Detects	0.791	Kurtosis Detects	-1.031
Mean of Logged Detects	-5.248	SD of Logged Detects	1.014
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.229	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.73E-04	Standard Error of Mean	2.61E-04
SD	0.00272	95% KM (BCA) UCL	0.00134
95% KM (t) UCL	1.20E-03	95% KM (Percentile Bootstrap) UCL	0.12%
95% KM (z) UCL	0.0012	95% KM Bootstrap t UCL	0.00135
90% KM Chebyshev UCL	0.00155	95% KM Chebyshev UCL	0.00191
97.5% KM Chebyshev UCL	0.0024	99% KM Chebyshev UCL	0.00337

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.48	Anderson-Darling GOF Test	
5% A-D Critical Value	0.737	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.246	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.285	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.335	k star (bias corrected MLE)	0.964
Theta hat (MLE)	5.99E-03	Theta star (bias corrected MLE)	8.29E-03
nu hat (MLE)	24.03	nu star (bias corrected)	17.36
MLE Mean (bias corrected)	0.00799	MLE Sd (bias corrected)	0.00814
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0806	nu hat (KM)	19.83
Approximate Chi Square Value (19.83, α)	10.73	Adjusted Chi Square Value (19.83, β)	10.65
95% Gamma Approximate KM-UCL (use when n>=50)	0.00143	95% Gamma Adjusted KM-UCL (use when n<50)	0.00144
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00131	Mean	0.00985
Maximum	0.0202	Median	0.01
SD	0.00189	CV	0.192
k hat (MLE)	15.66	k star (bias corrected MLE)	15.29
Theta hat (MLE)	6.29E-04	Theta star (bias corrected MLE)	6.45E-04
nu hat (MLE)	3853	nu star (bias corrected)	#####
MLE Mean (bias corrected)	0.00985	MLE Sd (bias corrected)	0.00252
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (N/A, α)	3619	Adjusted Chi Square Value (N/A, β)	3618
95% Gamma Approximate UCL (use when n>=50)	0.0102	95% Gamma Adjusted UCL (use when n<50)	0.0102
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.906	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.225	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6.02E-04	Mean in Log Scale	-10.6
SD in Original Scale	2.77E-03	SD in Log Scale	1.60E+00
95% t UCL (assumes normality of ROS data)	0.00102	95% Percentile Bootstrap UCL	0.00104
95% BCA Bootstrap UCL	0.00119	95% Bootstrap t UCL	0.00134
95% H-UCL (Log ROS)	1.34E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.281	95% H-UCL (KM -Log)	4.50E-04
KM SD (logged)	0.898	95% Critical H Value (KM-Log)	2.1
KM Standard Error of Mean (logged)	0.0868		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00102	Mean in Log Scale	-7.661
SD in Original Scale	0.0027	SD in Log Scale	0.933
95% t UCL (Assumes normality)	0.00143	95% H-Stat UCL	8.71E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0012	95% KM (Percentile Bootstrap) UCL	0.00124
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (dioxin furans (ng/l)***total tetrachlorodibenzo-p-dioxin (tcdd)***41903-57-5***ng/l****)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	108
Number of Detects	16	Number of Non-Detects	107
Number of Distinct Detects	15	Number of Distinct Non-Detects	98
Minimum Detect	5.53E-04	Minimum Non-Detect	1.86E-04

Maximum Detect	0.00283	Maximum Non-Detect	0.00422
Variance Detects	4.54E-07	Percent Non-Detects	86.99%
Mean Detects	0.00138	SD Detects	6.73E-04
Median Detects	0.00114	CV Detects	0.489
Skewness Detects	1.053	Kurtosis Detects	0.373
Mean of Logged Detects	-6.693	SD of Logged Detects	0.468
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.895	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.887	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.177	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.222	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.14E-04	Standard Error of Mean	5.54E-05
SD	4.95E-04	95% KM (BCA) UCL	5.98E-04
95% KM (t) UCL	5.06E-04	95% KM (Percentile Bootstrap) UCL	5.66E-04
95% KM (z) UCL	5.05E-04	95% KM Bootstrap t UCL	5.01E-04
90% KM Chebyshev UCL	5.80E-04	95% KM Chebyshev UCL	6.56E-04
97.5% KM Chebyshev UCL	7.60E-04	99% KM Chebyshev UCL	9.66E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.288	Anderson-Darling GOF Test	
5% A-D Critical Value	0.741	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.134	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.216	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	4.948	k star (bias corrected MLE)	4.062
Theta hat (MLE)	2.78E-04	Theta star (bias corrected MLE)	3.39E-04
nu hat (MLE)	1.58E+02	nu star (bias corrected)	1.30E+02
MLE Mean (bias corrected)	1.38E-03	MLE Sd (bias corrected)	6.83E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	7.01E-01	nu hat (KM)	1.72E+02
Approximate Chi Square Value (172.39, α)	143	Adjusted Chi Square Value (172.39, β)	142.7
95% Gamma Approximate KM-UCL (use when n>=50)	4.99E-04	95% Gamma Adjusted KM-UCL (use when n<50)	5.00E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	5.53E-04	Mean	0.00888
Maximum	0.01	Median	0.01
SD	2.92E-03	CV	3.29E-01
k hat (MLE)	3.434	k star (bias corrected MLE)	3.356
Theta hat (MLE)	0.00259	Theta star (bias corrected MLE)	2.65E-03
nu hat (MLE)	844.8	nu star (bias corrected)	#####
MLE Mean (bias corrected)	0.00888	MLE Sd (bias corrected)	0.00485
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (825.50, α)	759.8	Adjusted Chi Square Value (825.50, β)	759.1
95% Gamma Approximate UCL (use when n>=50)	9.65E-03	95% Gamma Adjusted UCL (use when n<50)	9.65E-03
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.975	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.887	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.104	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.222	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.15E-04	Mean in Log Scale	-8.03
SD in Original Scale	4.44E-04	SD in Log Scale	0.57
95% t UCL (assumes normality of ROS data)	4.81E-04	95% Percentile Bootstrap UCL	4.86E-04
95% BCA Bootstrap UCL	4.99E-04	95% Bootstrap t UCL	5.06E-04
95% H-UCL (Log ROS)	4.22E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.176	95% H-UCL (KM -Log)	4.28E-04
KM SD (logged)	0.755	95% Critical H Value (KM-Log)	1.987
KM Standard Error of Mean (logged)	0.102		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	6.73E-04	Mean in Log Scale	-7.515
SD in Original Scale	4.99E-04	SD in Log Scale	0.639

95% t UCL (Assumes normality)

7.48E-04

95% H-Stat UCL

7.46E-04

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL

5.06E-04

95% KM (Percentile Bootstrap) UCL

5.66E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***aluminum***7429-90-5***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	120
Number of Detects	214	Number of Non-Detects	148
Number of Distinct Detects	120	Number of Distinct Non-Detects	3
Minimum Detect	20	Minimum Non-Detect	20
Maximum Detect	1680	Maximum Non-Detect	100
Variance Detects	30229	Percent Non-Detects	40.88%
Mean Detects	1.16E+02	SD Detects	1.74E+02
Median Detects	65	CV Detects	1.5
Skewness Detects	5.146	Kurtosis Detects	35.95
Mean of Logged Detects	4.268	SD of Logged Detects	0.887

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.528	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.291	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0606	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	82.37	Standard Error of Mean	7.412
SD	140	95% KM (BCA) UCL	94.85
95% KM (t) UCL	94.59	95% KM (Percentile Bootstrap) UCL	9489.00%
95% KM (z) UCL	94.56	95% KM Bootstrap t UCL	99.39
90% KM Chebyshev UCL	104.6	95% KM Chebyshev UCL	114.7
97.5% KM Chebyshev UCL	128.7	99% KM Chebyshev UCL	156.1

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.119	Anderson-Darling GOF Test	
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.14	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0636	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.17	k star (bias corrected MLE)	1.157
Theta hat (MLE)	99.04	Theta star (bias corrected MLE)	100.2
nu hat (MLE)	500.8	nu star (bias corrected)	495.1
MLE Mean (bias corrected)	115.9	MLE Sd (bias corrected)	107.7

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.346	nu hat (KM)	250.8
Approximate Chi Square Value (250.76, α)	215.1	Adjusted Chi Square Value (250.76, β)	215
95% Gamma Approximate KM-UCL (use when n>=50)	96.03	95% Gamma Adjusted KM-UCL (use when n<50)	96.09

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	76.73
Maximum	1680	Median	39
SD	143.8	CV	1.875
k hat (MLE)	0.265	k star (bias corrected MLE)	0.265
Theta hat (MLE)	289.4	Theta star (bias corrected MLE)	289.8
nu hat (MLE)	192	nu star (bias corrected)	191.7
MLE Mean (bias corrected)	76.73	MLE Sd (bias corrected)	#####
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (191.70, α)	160.7	Adjusted Chi Square Value (191.70, β)	160.6
95% Gamma Approximate UCL (use when n>=50)	91.55	95% Gamma Adjusted UCL (use when n<50)	91.61

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0758	Lilliefors GOF Test	

5% Lilliefors Critical Value		0.0606		Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level					
Lognormal ROS Statistics Using Imputed Non-Detects					
Mean in Original Scale	80.57	Mean in Log Scale			3.748
SD in Original Scale	141.2	SD in Log Scale			1.091
95% t UCL (assumes normality of ROS data)	92.81	95% Percentile Bootstrap UCL			92.96
95% BCA Bootstrap UCL	94.9	95% Bootstrap t UCL			96.07
95% H-UCL (Log ROS)	87.34				
DL/2 Statistics					
DL/2 Normal		DL/2 Log-Transformed			
Mean in Original Scale	83.26	Mean in Log Scale			3.898
SD in Original Scale	139.7	SD in Log Scale			0.944
95% t UCL (Assumes normality)	95.37	95% H-Stat UCL			85.36
DL/2 is not a recommended method, provided for comparisons and historical reasons					
Nonparametric Distribution Free UCL Statistics					
Data do not follow a Discernible Distribution at 5% Significance Level					
Suggested UCL to Use					
95% KM (t) UCL	94.59	95% KM (% Bootstrap) UCL			94.89
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.					
RESULT_VALUE_MDL (metals (ug/l)***antimony***7440-36-0***ug/l***t)					
General Statistics					
Total Number of Observations	362	Number of Distinct Observations			60
Number of Detects	75	Number of Non-Detects			287
Number of Distinct Detects	57	Number of Distinct Non-Detects			6
Minimum Detect	1.1	Minimum Non-Detect			0.1
Maximum Detect	90.9	Maximum Non-Detect			16
Variance Detects	292.1	Percent Non-Detects			79.28%
Mean Detects	10.97	SD Detects			17.09
Median Detects	6.5	CV Detects			1.558
Skewness Detects	3.25	Kurtosis Detects			10.97
Mean of Logged Detects	1.767	SD of Logged Detects			1.028
Normal GOF Test on Detects Only					
Shapiro Wilk Test Statistic	0.552	Normal GOF Test on Detected Observations Only			
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level			
Lilliefors Test Statistic	0.302	Lilliefors GOF Test			
5% Lilliefors Critical Value	0.102	Detected Data Not Normal at 5% Significance Level			
Detected Data Not Normal at 5% Significance Level					
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs					
Mean	2.546	Standard Error of Mean			0.473
SD	8.889	95% KM (BCA) UCL			3.399
95% KM (t) UCL	3.326	95% KM (Percentile Bootstrap) UCL			338.80%
95% KM (z) UCL	3.324	95% KM Bootstrap t UCL			3.556
90% KM Chebyshev UCL	3.965	95% KM Chebyshev UCL			4.608
97.5% KM Chebyshev UCL	5.5	99% KM Chebyshev UCL			7.253
Gamma GOF Tests on Detected Observations Only					
A-D Test Statistic	3.744	Anderson-Darling GOF Test			
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level			
K-S Test Statistic	0.173	Kolmogrov-Smirnoff GOF			
5% K-S Critical Value	0.106	Detected Data Not Gamma Distributed at 5% Significance Level			
Detected Data Not Gamma Distributed at 5% Significance Level					
Gamma Statistics on Detected Data Only					
k hat (MLE)	0.927	k star (bias corrected MLE)			0.899
Theta hat (MLE)	11.84	Theta star (bias corrected MLE)			12.21
nu hat (MLE)	139	nu star (bias corrected)			134.8
MLE Mean (bias corrected)	10.97	MLE Sd (bias corrected)			11.57
Gamma Kaplan-Meier (KM) Statistics					
k hat (KM)	0.082	nu hat (KM)			59.38
Approximate Chi Square Value (59.38, α)	42.66	Adjusted Chi Square Value (59.38, β)			42.6
95% Gamma Approximate KM-UCL (use when n>=50)	3.543	95% Gamma Adjusted KM-UCL (use when n<50)			3.548
Gamma (KM) may not be used when k hat (KM) is < 0.1					
Gamma ROS Statistics using Imputed Non-Detects					
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs					
GROS may not be used when kstar of detected data is small such as < 0.1					

For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	2.371
Maximum	90.9 Median	0.01
SD	8.929 CV	3.767
k hat (MLE)	0.186 k star (bias corrected MLE)	0.186
Theta hat (MLE)	12.76 Theta star (bias corrected MLE)	12.74
nu hat (MLE)	134.5 nu star (bias corrected)	134.7
MLE Mean (bias corrected)	2.371 MLE Sd (bias corrected)	5.496
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (134.70, α)	108.9 Adjusted Chi Square Value (134.70, β)	108.8
95% Gamma Approximate UCL (use when n>=50)	2.933 95% Gamma Adjusted UCL (use when n<50)	2.935
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0914 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.102 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.707 Mean in Log Scale	-0.813
SD in Original Scale	8.847 SD in Log Scale	1.923
95% t UCL (assumes normality of ROS data)	3.474 95% Percentile Bootstrap UCL	3.449
95% BCA Bootstrap UCL	3.755 95% Bootstrap t UCL	3.859
95% H-UCL (Log ROS)	3.827	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-1.244 95% H-UCL (KM -Log)	1.926
KM SD (logged)	1.803 95% Critical H Value (KM-Log)	2.894
KM Standard Error of Mean (logged)	0.108	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	3.619 Mean in Log Scale	0.363
SD in Original Scale	8.753 SD in Log Scale	1.311
95% t UCL (Assumes normality)	4.377 95% H-Stat UCL	4.008
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	3.399	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (metals (ug/l)***arsenic***7440-38-2***ug/l***t)		
General Statistics		
Total Number of Observations	362 Number of Distinct Observations	146
Number of Detects	333 Number of Non-Detects	29
Number of Distinct Detects	143 Number of Distinct Non-Detects	3
Minimum Detect	0.28 Minimum Non-Detect	0.09
Maximum Detect	22.8 Maximum Non-Detect	4
Variance Detects	2.532 Percent Non-Detects	8.01%
Mean Detects	1.451 SD Detects	1.591
Median Detects	1.26 CV Detects	1.097
Skewness Detects	9.774 Kurtosis Detects	112.7
Mean of Logged Detects	0.219 SD of Logged Detects	0.479
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.313 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.322 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0486 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1.415 Standard Error of Mean	0.0812
SD	1.538 95% KM (BCA) UCL	156.40%
95% KM (t) UCL	1.549 95% KM (Percentile Bootstrap) UCL	1.555
95% KM (z) UCL	1.548 95% KM Bootstrap t UCL	1.653
90% KM Chebyshev UCL	1.658 95% KM Chebyshev UCL	1.769
97.5% KM Chebyshev UCL	1.922 99% KM Chebyshev UCL	2.222
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.00E+28 Anderson-Darling GOF Test	

5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.177	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0501	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.417	k star (bias corrected MLE) 3.388
Theta hat (MLE)	0.425	Theta star (bias corrected MLE) 0.428
nu hat (MLE)	2275	nu star (bias corrected) 2256
MLE Mean (bias corrected)	1.451	MLE Sd (bias corrected) 0.788
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.846	nu hat (KM) 612.6
Approximate Chi Square Value (612.63, α)	556.2	Adjusted Chi Square Value (612.63, β) 556
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.56E+00	95% Gamma Adjusted KM-UCL (use when $n < 50$) 1.559
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 1.416
Maximum	22.8	Median 1.26
SD	1.547	CV 1.093
k hat (MLE)	2.437	k star (bias corrected MLE) 2.419
Theta hat (MLE)	0.581	Theta star (bias corrected MLE) 0.585
nu hat (MLE)	1765	nu star (bias corrected) 1751
MLE Mean (bias corrected)	1.416	MLE Sd (bias corrected) 0.911
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1655	Adjusted Chi Square Value (N/A, β) 1655
95% Gamma Approximate UCL (use when $n \geq 50$)	1.498	95% Gamma Adjusted UCL (use when $n < 50$) 1.499
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.123	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0486	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.421	Mean in Log Scale 0.197
SD in Original Scale	1.536	SD in Log Scale 0.49
95% t UCL (assumes normality of ROS data)	1.554	95% Percentile Bootstrap UCL 1.57
95% BCA Bootstrap UCL	1.634	95% Bootstrap t UCL 1.653
95% H-UCL (Log ROS)	1.437	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	1.426	Mean in Log Scale 0.169
SD in Original Scale	1.542	SD in Log Scale 0.632
95% t UCL (Assumes normality)	1.56	95% H-Stat UCL 1.539
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	1.564	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (metals (ug/l)***barium***7440-39-3***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 162
		Number of Missing Observations 0
Minimum	7	Mean 20.93
Maximum	69.6	Median 20.3
SD	6.045	Std. Error of Mean 0.318
Coefficient of Variation	0.289	Skewness 1.916
Normal GOF Test		
Shapiro Wilk Test Statistic	0.92	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.0834	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	21.45	95% Adjusted-CLT UCL (Chen-1995)	21.49
		95% Modified-t UCL (Johnson-1978)	21.46
Gamma GOF Test			
A-D Test Statistic	1.215	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.753	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0454	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0478	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	13.51	k star (bias corrected MLE)	13.4
Theta hat (MLE)	1.549	Theta star (bias corrected MLE)	1.562
nu hat (MLE)	9783	nu star (bias corrected)	9704
MLE Mean (bias corrected)	20.93	MLE Sd (bias corrected)	5.717
		Approximate Chi Square Value (0.05)	9476
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	9475
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	21.43	95% Adjusted Gamma UCL (use when n<50)	21.43
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.99	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.928	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0395	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.946	Mean of logged Data	3.004
Maximum of Logged Data	4.243	SD of logged Data	0.273
Assuming Lognormal Distribution			
95% H-UCL	21.44	90% Chebyshev (MVUE) UCL	21.84
95% Chebyshev (MVUE) UCL	22.25	97.5% Chebyshev (MVUE) UCL	22.83
99% Chebyshev (MVUE) UCL	23.96		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	21.45	95% Jackknife UCL	21.45
95% Standard Bootstrap UCL	21.45	95% Bootstrap-t UCL	21.49
95% Hall's Bootstrap UCL	21.51	95% Percentile Bootstrap UCL	21.44
95% BCA Bootstrap UCL	21.47		
90% Chebyshev(Mean, Sd) UCL	21.88	95% Chebyshev(Mean, Sd) UCL	22.31
97.5% Chebyshev(Mean, Sd) UCL	22.91	99% Chebyshev(Mean, Sd) UCL	24.09
Suggested UCL to Use			
95% Approximate Gamma UCL	21.43		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals (ug/l)***cadmium***7440-43-9***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	9
Number of Detects	14	Number of Non-Detects	348
Number of Distinct Detects	3	Number of Distinct Non-Detects	6
Minimum Detect	0.1	Minimum Non-Detect	0.05
Maximum Detect	1.1	Maximum Non-Detect	2.5
Variance Detects	0.0699	Percent Non-Detects	96.13%
Mean Detects	0.193	SD Detects	0.264
Median Detects	0.1	CV Detects	1.371
Skewness Detects	3.583	Kurtosis Detects	13.12
Mean of Logged Detects	-1.983	SD of Logged Detects	0.666
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.397	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.418	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.122	Standard Error of Mean	0.013
SD	0.0767	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.143	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.143	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.161	95% KM Chebyshev UCL	0.179
97.5% KM Chebyshev UCL	0.203	99% KM Chebyshev UCL	0.251

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.052	Anderson-Darling GOF Test	
5% A-D Critical Value	0.749	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.399	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.232	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.631	k star (bias corrected MLE)	1.329
Theta hat (MLE)	0.118	Theta star (bias corrected MLE)	0.145
nu hat (MLE)	45.66	nu star (bias corrected)	37.21
MLE Mean (bias corrected)	0.193	MLE Sd (bias corrected)	0.167

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.523	nu hat (KM)	1826
Approximate Chi Square Value (N/A, α)	1728	Adjusted Chi Square Value (N/A, β)	1728
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.129	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.129

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.142
Maximum	1.1	Median	0.1
SD	0.151	CV	1.061
k hat (MLE)	0.862	k star (bias corrected MLE)	0.857
Theta hat (MLE)	0.165	Theta star (bias corrected MLE)	0.166
nu hat (MLE)	624.1	nu star (bias corrected)	620.3
MLE Mean (bias corrected)	0.142	MLE Sd (bias corrected)	0.153
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (620.26, α)	563.5	Adjusted Chi Square Value (620.26, β)	563.3
95% Gamma Approximate UCL (use when $n \geq 50$)	0.156	95% Gamma Adjusted UCL (use when $n < 50$)	0.156

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.553	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.399	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.135	Mean in Log Scale	-2.156
SD in Original Scale	0.0879	SD in Log Scale	0.538
95% t UCL (assumes normality of ROS data)	0.142	95% Percentile Bootstrap UCL	0.143
95% BCA Bootstrap UCL	0.144	95% Bootstrap t UCL	0.143
95% H-UCL (Log ROS)	0.141		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.548	Mean in Log Scale	-0.913
SD in Original Scale	0.449	SD in Log Scale	0.769
95% t UCL (Assumes normality)	0.587	95% H-Stat UCL	0.584
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.143	95% KM (% Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	100
		Number of Missing Observations	0
Minimum	140000	Mean	260964
Maximum	320000	Median	268000
SD	28504	Std. Error of Mean	1498
Coefficient of Variation	0.109	Skewness	-1.333
Normal GOF Test			
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.12	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	263435	95% Adjusted-CLT UCL (Chen-1995)	263316
		95% Modified-t UCL (Johnson-1978)	263417
Gamma GOF Test			
A-D Test Statistic	12.92	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.132	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	73.89	k star (bias corrected MLE)	73.28
Theta hat (MLE)	3532	Theta star (bias corrected MLE)	3561
nu hat (MLE)	53498	nu star (bias corrected)	53056
MLE Mean (bias corrected)	260964	MLE Sd (bias corrected)	30485
		Approximate Chi Square Value (0.05)	52521
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	52519
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	263621	95% Adjusted Gamma UCL (use when n<50)	263631
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.845	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.138	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	11.85	Mean of logged Data	12.47
Maximum of Logged Data	12.68	SD of logged Data	0.121
Assuming Lognormal Distribution			
95% H-UCL	263879	90% Chebyshev (MVUE) UCL	266089
95% Chebyshev (MVUE) UCL	268352	97.5% Chebyshev (MVUE) UCL	271491
99% Chebyshev (MVUE) UCL	277659		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	263428	95% Jackknife UCL	263435
95% Standard Bootstrap UCL	263463	95% Bootstrap-t UCL	263417
95% Hall's Bootstrap UCL	263407	95% Percentile Bootstrap UCL	263436
95% BCA Bootstrap UCL	263442		
90% Chebyshev(Mean, Sd) UCL	265458	95% Chebyshev(Mean, Sd) UCL	267494
97.5% Chebyshev(Mean, Sd) UCL	270320	99% Chebyshev(Mean, Sd) UCL	275870
Suggested UCL to Use			
95% Student's-t UCL	263435	or 95% Modified-t UCL	263417

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

RESULT_VALUE_MDL (metals (ug/l)***chromium***7440-47-3***ug/l***t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	28
Number of Detects	35	Number of Non-Detects	327
Number of Distinct Detects	25	Number of Distinct Non-Detects	5
Minimum Detect	0.5	Minimum Non-Detect	0.2
Maximum Detect	10.4	Maximum Non-Detect	10
Variance Detects	6.018	Percent Non-Detects	90.33%
Mean Detects	3.52	SD Detects	2.453
Median Detects	2.5	CV Detects	0.697
Skewness Detects	1.281	Kurtosis Detects	1.008
Mean of Logged Detects	1.036	SD of Logged Detects	0.693
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.846	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.934	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.244	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.15	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.736	Standard Error of Mean	0.0948
SD	1.403	95% KM (BCA) UCL	90.20%
95% KM (t) UCL	0.892	95% KM (Percentile Bootstrap) UCL	89.80%
95% KM (z) UCL	0.892	95% KM Bootstrap t UCL	0.919
90% KM Chebyshev UCL	1.02	95% KM Chebyshev UCL	1.149
97.5% KM Chebyshev UCL	1.328	99% KM Chebyshev UCL	1.679
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.009	Anderson-Darling GOF Test	
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.177	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.15	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.396	k star (bias corrected MLE)	2.21
Theta hat (MLE)	1.469	Theta star (bias corrected MLE)	1.593
nu hat (MLE)	167.7	nu star (bias corrected)	154.7
MLE Mean (bias corrected)	3.52	MLE Sd (bias corrected)	2.368
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.275	nu hat (KM)	199.1
Approximate Chi Square Value (199.08, α)	167.4	Adjusted Chi Square Value (199.08, β)	167.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.875	95% Gamma Adjusted KM-UCL (use when n<50)	0.875
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.534
Maximum	10.4	Median	0.01
SD	1.423	CV	2.665
k hat (MLE)	0.249	k star (bias corrected MLE)	0.248
Theta hat (MLE)	2.147	Theta star (bias corrected MLE)	2.149
nu hat (MLE)	180	nu star (bias corrected)	179.9
MLE Mean (bias corrected)	0.534	MLE Sd (bias corrected)	1.071
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (179.88, α)	149.9	Adjusted Chi Square Value (179.88, β)	149.7
95% Gamma Approximate UCL (use when n>=50)	0.641	95% Gamma Adjusted UCL (use when n<50)	0.641
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.945	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.934	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.132	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.15	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.787	Mean in Log Scale	-1.099
SD in Original Scale	1.342	SD in Log Scale	1.321
95% t UCL (assumes normality of ROS data)	0.903	95% Percentile Bootstrap UCL	0.911
95% BCA Bootstrap UCL	0.934	95% Bootstrap t UCL	0.922
95% H-UCL (Log ROS)	0.943		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.054	95% H-UCL (KM -Log)	0.635
KM SD (logged)	0.989	95% Critical H Value (KM-Log)	2.117
KM Standard Error of Mean (logged)	0.11		

DL/2 Statistics			
DL/2 Normal	DL/2 Log-Transformed		
Mean in Original Scale	2.305	Mean in Log Scale	0.438
SD in Original Scale	1.996	SD in Log Scale	0.934
95% t UCL (Assumes normality)	2.478	95% H-Stat UCL	2.655
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.892	95% KM (% Bootstrap) UCL	0.898

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***cobalt***7440-48-4***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	8
Number of Detects	15	Number of Non-Detects	347
Number of Distinct Detects	5	Number of Distinct Non-Detects	3
Minimum Detect	0.1	Minimum Non-Detect	1
Maximum Detect	1.1	Maximum Non-Detect	10
Variance Detects	0.0607	Percent Non-Detects	95.86%
Mean Detects	0.273	SD Detects	0.246
Median Detects	0.2	CV Detects	0.901
Skewness Detects	3.002	Kurtosis Detects	10.29
Mean of Logged Detects	-1.526	SD of Logged Detects	0.647

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.617	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.324	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.229	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.218	Standard Error of Mean	0.0255
SD	0.108	95% KM (BCA) UCL	26.10%
95% KM (t) UCL	0.26	95% KM (Percentile Bootstrap) UCL	0.259
95% KM (z) UCL	0.26	95% KM Bootstrap t UCL	26.70%
90% KM Chebyshev UCL	0.295	95% KM Chebyshev UCL	0.329
97.5% KM Chebyshev UCL	0.377	99% KM Chebyshev UCL	0.472

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.948	Anderson-Darling GOF Test	
5% A-D Critical Value	0.746	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.225	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.224	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.334	k star (bias corrected MLE)	1.912
Theta hat (MLE)	0.117	Theta star (bias corrected MLE)	0.143
nu hat (MLE)	70.03	nu star (bias corrected)	57.36
MLE Mean (bias corrected)	0.273	MLE Sd (bias corrected)	0.198

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	4.075	nu hat (KM)	2950
Approximate Chi Square Value (N/A, α)	2825	Adjusted Chi Square Value (N/A, β)	2825
95% Gamma Approximate KM-UCL (use when n>=50)	0.228	95% Gamma Adjusted KM-UCL (use when n<50)	0.228

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.233
Maximum	1.1	Median	0.2
SD	0.164	CV	0.703
k hat (MLE)	1.86	k star (bias corrected MLE)	1.846
Theta hat (MLE)	0.125	Theta star (bias corrected MLE)	0.126
nu hat (MLE)	1347	nu star (bias corrected)	1337
MLE Mean (bias corrected)	0.233	MLE Sd (bias corrected)	0.172
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1253	Adjusted Chi Square Value (N/A, β)	1253

95% Gamma Approximate UCL (use when n>=50)	0.249	95% Gamma Adjusted UCL (use when n<50)	0.249
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.874	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.182	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.229	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.228	Mean in Log Scale	-1.629
SD in Original Scale	0.133	SD in Log Scale	0.546
95% t UCL (assumes normality of ROS data)	0.239	95% Percentile Bootstrap UCL	0.24
95% BCA Bootstrap UCL	0.24	95% Bootstrap t UCL	0.24
95% H-UCL (Log ROS)	0.24		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.635	95% H-UCL (KM -Log)	0.229
KM SD (logged)	0.479	95% Critical H Value (KM-Log)	1.784
KM Standard Error of Mean (logged)	0.129		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.294	Mean in Log Scale	-0.132
SD in Original Scale	1.192	SD in Log Scale	0.868
95% t UCL (Assumes normality)	1.398	95% H-Stat UCL	1.401
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.26	95% KM (% Bootstrap) UCL	0.259
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals (ug/l)***copper***7440-50-8***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	83
Number of Detects	237	Number of Non-Detects	125
Number of Distinct Detects	82	Number of Distinct Non-Detects	6
Minimum Detect	1	Minimum Non-Detect	0.1
Maximum Detect	90.2	Maximum Non-Detect	5
Variance Detects	44.91	Percent Non-Detects	34.53%
Mean Detects	4.881	SD Detects	6.702
Median Detects	3.3	CV Detects	1.373
Skewness Detects	9.269	Kurtosis Detects	112.3
Mean of Logged Detects	1.318	SD of Logged Detects	0.617
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.407	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.289	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0576	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.824	Standard Error of Mean	0.301
SD	5.67	95% KM (BCA) UCL	439.50%
95% KM (t) UCL	4.321	95% KM (Percentile Bootstrap) UCL	4.364
95% KM (z) UCL	4.32	95% KM Bootstrap t UCL	4.599
90% KM Chebyshev UCL	4.728	95% KM Chebyshev UCL	5.138
97.5% KM Chebyshev UCL	5.706	99% KM Chebyshev UCL	6.822
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	13.67	Anderson-Darling GOF Test	
5% A-D Critical Value	0.766	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.189	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0601	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.025	k star (bias corrected MLE)	2.002
Theta hat (MLE)	2.41	Theta star (bias corrected MLE)	2.438
nu hat (MLE)	959.7	nu star (bias corrected)	948.9

MLE Mean (bias corrected)	4.881	MLE Sd (bias corrected)	3.449
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.455	nu hat (KM)	329.3
Approximate Chi Square Value (329.30, α)	288.3	Adjusted Chi Square Value (329.30, β)	288.1
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	4.369	95% Gamma Adjusted KM-UCL (use when $n < 50$)	4.371

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.732
Maximum	90.2	Median	2.8
SD	5.778	CV	1.548
k hat (MLE)	0.567	k star (bias corrected MLE)	0.564
Theta hat (MLE)	6.585	Theta star (bias corrected MLE)	6.618
nu hat (MLE)	410.3	nu star (bias corrected)	408.2
MLE Mean (bias corrected)	3.732	MLE Sd (bias corrected)	4.969
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (408.23, α)	362.4	Adjusted Chi Square Value (408.23, β)	362.2
95% Gamma Approximate UCL (use when $n \geq 50$)	4.204	95% Gamma Adjusted UCL (use when $n < 50$)	4.205

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.131	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0576	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.962	Mean in Log Scale	1.077
SD in Original Scale	5.618	SD in Log Scale	0.697
95% t UCL (assumes normality of ROS data)	4.449	95% Percentile Bootstrap UCL	4.469
95% BCA Bootstrap UCL	4.738	95% Bootstrap t UCL	4.736
95% H-UCL (Log ROS)	4.016		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.851	Mean in Log Scale	1.004
SD in Original Scale	5.625	SD in Log Scale	0.839
95% t UCL (Assumes normality)	4.338	95% H-Stat UCL	4.239
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	4.395		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***iron***7439-89-6***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	188
Number of Detects	260	Number of Non-Detects	102
Number of Distinct Detects	185	Number of Distinct Non-Detects	4
Minimum Detect	130	Minimum Non-Detect	20
Maximum Detect	3470	Maximum Non-Detect	650
Variance Detects	86297	Percent Non-Detects	28.18%
Mean Detects	359.5	SD Detects	293.8
Median Detects	284	CV Detects	0.817
Skewness Detects	6.312	Kurtosis Detects	55.5
Mean of Logged Detects	5.744	SD of Logged Detects	0.467

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.533	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.225	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0549	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	340.6	Standard Error of Mean	14.06
SD	258.1	95% KM (BCA) UCL	#####
95% KM (t) UCL	363.7	95% KM (Percentile Bootstrap) UCL	366.6
95% KM (z) UCL	363.7	95% KM Bootstrap t UCL	370.5

90% KM Chebyshev UCL	382.7	95% KM Chebyshev UCL	401.8
97.5% KM Chebyshev UCL	428.3	99% KM Chebyshev UCL	480.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	9.381	Anderson-Darling GOF Test	
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.129	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.057	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	3.701	k star (bias corrected MLE)	3.661
Theta hat (MLE)	97.14	Theta star (bias corrected MLE)	98.2
nu hat (MLE)	1925	nu star (bias corrected)	1904
MLE Mean (bias corrected)	359.5	MLE Sd (bias corrected)	187.9

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.741	nu hat (KM)	1261
Approximate Chi Square Value (N/A, α)	1179	Adjusted Chi Square Value (N/A, β)	1179
95% Gamma Approximate KM-UCL (use when n>=50)	364.1	95% Gamma Adjusted KM-UCL (use when n<50)	364.2

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	343.9
Maximum	3470	Median	284
SD	268.5	CV	0.781
k hat (MLE)	2.029	k star (bias corrected MLE)	2.014
Theta hat (MLE)	169.5	Theta star (bias corrected MLE)	170.7
nu hat (MLE)	1469	nu star (bias corrected)	1458
MLE Mean (bias corrected)	343.9	MLE Sd (bias corrected)	242.3
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1371	Adjusted Chi Square Value (N/A, β)	1370
95% Gamma Approximate UCL (use when n>=50)	365.9	95% Gamma Adjusted UCL (use when n<50)	366

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0935	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0549	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	344.1	Mean in Log Scale	5.712
SD in Original Scale	258.4	SD in Log Scale	0.461
95% t UCL (assumes normality of ROS data)	366.5	95% Percentile Bootstrap UCL	366.3
95% BCA Bootstrap UCL	374.6	95% Bootstrap t UCL	374.6
95% H-UCL (Log ROS)	351.2		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	347.5	Mean in Log Scale	5.736
SD in Original Scale	250.8	SD in Log Scale	0.451
95% t UCL (Assumes normality)	369.2	95% H-Stat UCL	357.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	368.5
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***lead***7439-92-1***ug/l***t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	38
Number of Detects	77	Number of Non-Detects	285
Number of Distinct Detects	37	Number of Distinct Non-Detects	4
Minimum Detect	0.5	Minimum Non-Detect	1.7
Maximum Detect	16.4	Maximum Non-Detect	10
Variance Detects	6.832	Percent Non-Detects	78.73%
Mean Detects	3.342	SD Detects	2.614
Median Detects	2.7	CV Detects	0.782
Skewness Detects	2.872	Kurtosis Detects	11.8

Mean of Logged Detects	0.961	SD of Logged Detects	0.737
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.749	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.151	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.101	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.521	Standard Error of Mean	0.13
SD	1.745	95% KM (BCA) UCL	176.40%
95% KM (t) UCL	1.735	95% KM (Percentile Bootstrap) UCL	1.745
95% KM (z) UCL	1.734	95% KM Bootstrap t UCL	1.764
90% KM Chebyshev UCL	1.91	95% KM Chebyshev UCL	2.087
97.5% KM Chebyshev UCL	2.332	99% KM Chebyshev UCL	2.813
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.051	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.111	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.103	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.188	k star (bias corrected MLE)	2.111
Theta hat (MLE)	1.527	Theta star (bias corrected MLE)	1.583
nu hat (MLE)	336.9	nu star (bias corrected)	325.1
MLE Mean (bias corrected)	3.342	MLE Sd (bias corrected)	2.3
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.759	nu hat (KM)	549.7
Approximate Chi Square Value (549.68, α)	496.3	Adjusted Chi Square Value (549.68, β)	496.1
95% Gamma Approximate KM-UCL (use when n>=50)	1.684	95% Gamma Adjusted KM-UCL (use when n<50)	1.685
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.231
Maximum	16.4	Median	0.416
SD	1.926	CV	1.565
k hat (MLE)	0.339	k star (bias corrected MLE)	0.338
Theta hat (MLE)	3.63	Theta star (bias corrected MLE)	3.641
nu hat (MLE)	245.5	nu star (bias corrected)	244.8
MLE Mean (bias corrected)	1.231	MLE Sd (bias corrected)	2.117
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (244.84, α)	209.6	Adjusted Chi Square Value (244.84, β)	209.5
95% Gamma Approximate UCL (use when n>=50)	1.438	95% Gamma Adjusted UCL (use when n<50)	1.439
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.138	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.101	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.553	Mean in Log Scale	0.0408
SD in Original Scale	1.725	SD in Log Scale	0.884
95% t UCL (assumes normality of ROS data)	1.702	95% Percentile Bootstrap UCL	1.701
95% BCA Bootstrap UCL	1.72	95% Bootstrap t UCL	1.731
95% H-UCL (Log ROS)	1.693		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.591	Mean in Log Scale	0.625
SD in Original Scale	2.135	SD in Log Scale	0.808
95% t UCL (Assumes normality)	2.776	95% H-Stat UCL	2.819
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.735	95% KM (% Bootstrap) UCL	1.745

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***magnesium***7439-95-4***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	209
		Number of Missing Observations	0
Minimum	300000	Mean	815544
Maximum	1140000	Median	826500
SD	113241	Std. Error of Mean	5952
Coefficient of Variation	0.139	Skewness	-0.975
Normal GOF Test			
Shapiro Wilk Test Statistic	0.923	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	825359	95% Adjusted-CLT UCL (Chen-1995)	825008
		95% Modified-t UCL (Johnson-1978)	825308
Gamma GOF Test			
A-D Test Statistic	13.51	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.15	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	44.4	k star (bias corrected MLE)	44.03
Theta hat (MLE)	18370	Theta star (bias corrected MLE)	18522
nu hat (MLE)	32143	nu star (bias corrected)	31878
MLE Mean (bias corrected)	815544	MLE Sd (bias corrected)	122906
		Approximate Chi Square Value (0.05)	31464
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	31462
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	826280	95% Adjusted Gamma UCL (use when n<50)	826322
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.842	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.162	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	12.61	Mean of logged Data	13.6
Maximum of Logged Data	13.95	SD of logged Data	0.158
Assuming Lognormal Distribution			
95% H-UCL	827976	90% Chebyshev (MVUE) UCL	836995
95% Chebyshev (MVUE) UCL	846277	97.5% Chebyshev (MVUE) UCL	859160
99% Chebyshev (MVUE) UCL	884466		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	825334	95% Jackknife UCL	825359
95% Standard Bootstrap UCL	825183	95% Bootstrap-t UCL	825061
95% Hall's Bootstrap UCL	824762	95% Percentile Bootstrap UCL	825713
95% BCA Bootstrap UCL	824265		
90% Chebyshev(Mean, Sd) UCL	833400	95% Chebyshev(Mean, Sd) UCL	841488
97.5% Chebyshev(Mean, Sd) UCL	852713	99% Chebyshev(Mean, Sd) UCL	874764
Suggested UCL to Use			
95% Student's-t UCL	825359	or 95% Modified-t UCL	825308

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be

reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

RESULT_VALUE_MDL (metals (ug/l)***manganese***7439-96-5***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	304
		Number of Missing Observations	0
Minimum	13.9	Mean	75.31
Maximum	248.9	Median	74.9
SD	32.43	Std. Error of Mean	1.705
Coefficient of Variation	0.431	Skewness	0.837
Normal GOF Test			
Shapiro Wilk Test Statistic	0.957	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	8.38E-10	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0529	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	78.12	95% Adjusted-CLT UCL (Chen-1995)	78.2
		95% Modified-t UCL (Johnson-1978)	78.13
Gamma GOF Test			
A-D Test Statistic	3.109	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0855	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.048	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.921	k star (bias corrected MLE)	4.882
Theta hat (MLE)	15.31	Theta star (bias corrected MLE)	15.43
nu hat (MLE)	3562	nu star (bias corrected)	3534
MLE Mean (bias corrected)	75.31	MLE Sd (bias corrected)	34.09
		Approximate Chi Square Value (0.05)	3397
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	3397
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	78.35	95% Adjusted Gamma UCL (use when n<50)	78.36
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.116	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.632	Mean of logged Data	4.217
Maximum of Logged Data	5.517	SD of logged Data	0.49
Assuming Lognormal Distribution			
95% H-UCL	80.04	90% Chebyshev (MVUE) UCL	82.64
95% Chebyshev (MVUE) UCL	85.46	97.5% Chebyshev (MVUE) UCL	89.38
99% Chebyshev (MVUE) UCL	97.08		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	78.12	95% Jackknife UCL	78.12
95% Standard Bootstrap UCL	78.1	95% Bootstrap-t UCL	78.13
95% Hall's Bootstrap UCL	78.28	95% Percentile Bootstrap UCL	78.19
95% BCA Bootstrap UCL	78.24		
90% Chebyshev(Mean, Sd) UCL	80.42	95% Chebyshev(Mean, Sd) UCL	82.74
97.5% Chebyshev(Mean, Sd) UCL	85.96	99% Chebyshev(Mean, Sd) UCL	92.27
Suggested UCL to Use			
95% Student's-t UCL	78.12	or 95% Modified-t UCL	78.13

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***mercury***7439-97-6***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	285
Number of Detects	360	Number of Non-Detects	2
Number of Distinct Detects	283	Number of Distinct Non-Detects	2
Minimum Detect	0.00105	Minimum Non-Detect	1.50E-04
Maximum Detect	0.278	Maximum Non-Detect	1.60E-04
Variance Detects	2.84E-04	Percent Non-Detects	0.55%
Mean Detects	0.00691	SD Detects	0.0168
Median Detects	0.00409	CV Detects	2.435
Skewness Detects	12.7	Kurtosis Detects	192.5
Mean of Logged Detects	-5.417	SD of Logged Detects	0.745
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.259	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.364	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00688	Standard Error of Mean	8.83E-04
SD	1.68E-02	95% KM (BCA) UCL	0.84%
95% KM (t) UCL	0.00833	95% KM (Percentile Bootstrap) UCL	0.00852
95% KM (z) UCL	0.00833	95% KM Bootstrap t UCL	0.01
90% KM Chebyshev UCL	0.00952	95% KM Chebyshev UCL	0.0107
97.5% KM Chebyshev UCL	0.0124	99% KM Chebyshev UCL	0.0157
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.78E+28	Anderson-Darling GOF Test	
5% A-D Critical Value	0.778	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.188	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0491	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.269	k star (bias corrected MLE)	1.26E+00
Theta hat (MLE)	0.00545	Theta star (bias corrected MLE)	0.00548
nu hat (MLE)	913.8	nu star (bias corrected)	907.5
MLE Mean (bias corrected)	0.00691	MLE Sd (bias corrected)	0.00616
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.168	nu hat (KM)	121.6
Approximate Chi Square Value (121.65, α)	97.18	Adjusted Chi Square Value (121.65, β)	97.09
95% Gamma Approximate KM-UCL (use when n>=50)	8.61E-03	95% Gamma Adjusted KM-UCL (use when n<50)	0.00862
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00105	Mean	0.00693
Maximum	0.278	Median	0.00412
SD	0.0168	CV	2.423
k hat (MLE)	1.274	k star (bias corrected MLE)	1.266
Theta hat (MLE)	0.00544	Theta star (bias corrected MLE)	0.00548
nu hat (MLE)	922.7	nu star (bias corrected)	916.4
MLE Mean (bias corrected)	0.00693	MLE Sd (bias corrected)	0.00616
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (916.41, α)	847.1	Adjusted Chi Square Value (916.41, β)	846.9
95% Gamma Approximate UCL (use when n>=50)	0.0075	95% Gamma Adjusted UCL (use when n<50)	0.0075
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0944	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00688	Mean in Log Scale	-5.429
SD in Original Scale	0.0168	SD in Log Scale	0.758
95% t UCL (assumes normality of ROS data)	0.00833	95% Percentile Bootstrap UCL	0.00849
95% BCA Bootstrap UCL	0.0093	95% Bootstrap t UCL	0.0102
95% H-UCL (Log ROS)	0.00632		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00688	Mean in Log Scale	-5.44
SD in Original Scale	0.0168	SD in Log Scale	0.801
95% t UCL (Assumes normality)	0.00833	95% H-Stat UCL	0.0065

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL 0.00842

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***nickel***7440-02-0***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	57
Number of Detects	213	Number of Non-Detects	149
Number of Distinct Detects	54	Number of Distinct Non-Detects	6
Minimum Detect	0.8	Minimum Non-Detect	0.1
Maximum Detect	19.3	Maximum Non-Detect	8
Variance Detects	8.263	Percent Non-Detects	41.16%
Mean Detects	2.762	SD Detects	2.874
Median Detects	1.8	CV Detects	1.041
Skewness Detects	3.234	Kurtosis Detects	11.75
Mean of Logged Detects	0.743	SD of Logged Detects	0.644

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.586	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.293	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0607	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.095	Standard Error of Mean	0.133
SD	2.433	95% KM (BCA) UCL	229.70%
95% KM (t) UCL	2.314	95% KM (Percentile Bootstrap) UCL	2.328
95% KM (z) UCL	2.313	95% KM Bootstrap t UCL	2.333
90% KM Chebyshev UCL	2.493	95% KM Chebyshev UCL	2.673
97.5% KM Chebyshev UCL	2.923	99% KM Chebyshev UCL	3.414

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	15.27	Anderson-Darling GOF Test	
5% A-D Critical Value	0.767	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.203	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.063	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.983	k star (bias corrected MLE)	1.958
Theta hat (MLE)	1.393	Theta star (bias corrected MLE)	1.411
nu hat (MLE)	844.8	nu star (bias corrected)	834.3
MLE Mean (bias corrected)	2.762	MLE Sd (bias corrected)	1.974

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.741	nu hat (KM)	536.7
Approximate Chi Square Value (536.72, α)	484	Adjusted Chi Square Value (536.72, β)	483.8
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.323	95% Gamma Adjusted KM-UCL (use when $n < 50$)	2.324

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.089
Maximum	19.3	Median	1.5
SD	2.542	CV	1.217
k hat (MLE)	0.56	k star (bias corrected MLE)	0.557
Theta hat (MLE)	3.732	Theta star (bias corrected MLE)	3.75
nu hat (MLE)	405.3	nu star (bias corrected)	403.3
MLE Mean (bias corrected)	2.089	MLE Sd (bias corrected)	2.799
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (403.30, α)	357.8	Adjusted Chi Square Value (403.30, β)	357.6
95% Gamma Approximate UCL (use when $n \geq 50$)	2.355	95% Gamma Adjusted UCL (use when $n < 50$)	2.356

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.144	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0607	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.186	Mean in Log Scale	0.461
SD in Original Scale	2.396	SD in Log Scale	0.753
95% t UCL (assumes normality of ROS data)	2.394	95% Percentile Bootstrap UCL	2.399
95% BCA Bootstrap UCL	2.432	95% Bootstrap t UCL	2.438
95% H-UCL (Log ROS)	2.274		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.435	Mean in Log Scale	0.584
SD in Original Scale	2.351	SD in Log Scale	0.832
95% t UCL (Assumes normality)	2.639	95% H-Stat UCL	2.764

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	2.314	95% KM (% Bootstrap) UCL	2.328
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***potassium***|7440-09-7***ug/l***t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	135
		Number of Missing Observations	0
Minimum	120000	Mean	252500
Maximum	467000	Median	249000
SD	49064	Std. Error of Mean	2579
Coefficient of Variation	0.194	Skewness	1.489

Normal GOF Test

Shapiro Wilk Test Statistic	0.888	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0947	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	256753	95% Adjusted-CLT UCL (Chen-1995)	256957
		95% Modified-t UCL (Johnson-1978)	256786

Gamma GOF Test

A-D Test Statistic	4.284	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.751	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0731	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics

k hat (MLE)	29.29	k star (bias corrected MLE)	29.05
Theta hat (MLE)	8620	Theta star (bias corrected MLE)	8691
nu hat (MLE)	21208	nu star (bias corrected)	21033
MLE Mean (bias corrected)	252500	MLE Sd (bias corrected)	46846
		Approximate Chi Square Value (0.05)	20697
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	20696

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	256602	95% Adjusted Gamma UCL (use when n<50)	256618
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.956	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.85E-10	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0675	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			

Lognormal Statistics

Minimum of Logged Data	11.7	Mean of logged Data	12.42
Maximum of Logged Data	13.05	SD of logged Data	0.183

Assuming Lognormal Distribution			
95% H-UCL	256515	90% Chebyshev (MVUE) UCL	259737
95% Chebyshev (MVUE) UCL	263065	97.5% Chebyshev (MVUE) UCL	267685
99% Chebyshev (MVUE) UCL	276760		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	256742	95% Jackknife UCL	256753
95% Standard Bootstrap UCL	256748	95% Bootstrap-t UCL	256966
95% Hall's Bootstrap UCL	257286	95% Percentile Bootstrap UCL	256630
95% BCA Bootstrap UCL	257138		
90% Chebyshev(Mean, Sd) UCL	260236	95% Chebyshev(Mean, Sd) UCL	263740
97.5% Chebyshev(Mean, Sd) UCL	268604	99% Chebyshev(Mean, Sd) UCL	278158
Suggested UCL to Use			
95% Student's-t UCL	256753	or 95% Modified-t UCL	256786
<p>Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.</p>			
RESULT_VALUE_MDL (metals (ug/l)***selenium***7782-49-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	35
Number of Detects	29	Number of Non-Detects	333
Number of Distinct Detects	27	Number of Distinct Non-Detects	8
Minimum Detect	0.611	Minimum Non-Detect	48.40%
Maximum Detect	3.61	Maximum Non-Detect	6
Variance Detects	0.689	Percent Non-Detects	91.99%
Mean Detects	1.375	SD Detects	0.83
Median Detects	1.2	CV Detects	0.604
Skewness Detects	1.356	Kurtosis Detects	1.319
Mean of Logged Detects	0.167	SD of Logged Detects	0.546
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.83	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.182	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.638	Standard Error of Mean	0.0273
SD	0.345	95% KM (BCA) UCL	72.80%
95% KM (t) UCL	0.683	95% KM (Percentile Bootstrap) UCL	0.716
95% KM (z) UCL	0.683	95% KM Bootstrap t UCL	0.684
90% KM Chebyshev UCL	0.72	95% KM Chebyshev UCL	0.757
97.5% KM Chebyshev UCL	0.809	99% KM Chebyshev UCL	0.91
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.978	Anderson-Darling GOF Test	
5% A-D Critical Value	0.752	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.19	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.164	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.454	k star (bias corrected MLE)	3.12
Theta hat (MLE)	0.398	Theta star (bias corrected MLE)	0.441
nu hat (MLE)	200.3	nu star (bias corrected)	181
MLE Mean (bias corrected)	1.375	MLE Sd (bias corrected)	0.779
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.42	nu hat (KM)	2476
Approximate Chi Square Value (N/A, α)	2361	Adjusted Chi Square Value (N/A, β)	2361
95% Gamma Approximate KM-UCL (use when n>=50)	0.669	95% Gamma Adjusted KM-UCL (use when n<50)	0.67
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.352
Maximum	3.61	Median	0.0741
SD	0.516	CV	1.466

k hat (MLE)	0.425	k star (bias corrected MLE)	0.424
Theta hat (MLE)	0.827	Theta star (bias corrected MLE)	0.831
nu hat (MLE)	307.9	nu star (bias corrected)	306.7
MLE Mean (bias corrected)	0.352	MLE Sd (bias corrected)	0.541
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (306.72, α)	267.2	Adjusted Chi Square Value (306.72, β)	267
95% Gamma Approximate UCL (use when n>=50)	0.404	95% Gamma Adjusted UCL (use when n<50)	0.404

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.909	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.192	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.534	Mean in Log Scale	-0.854
SD in Original Scale	0.425	SD in Log Scale	0.664
95% t UCL (assumes normality of ROS data)	0.571	95% Percentile Bootstrap UCL	0.574
95% BCA Bootstrap UCL	0.577	95% Bootstrap t UCL	0.575
95% H-UCL (Log ROS)	0.567		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.761	Mean in Log Scale	-0.415
SD in Original Scale	0.577	SD in Log Scale	0.454
95% t UCL (Assumes normality)	0.811	95% H-Stat UCL	0.764
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.683	95% KM (% Bootstrap) UCL	0.716
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***silicon***7440-21-3***ug/l***t)

General Statistics

Total Number of Observations	27	Number of Distinct Observations	25
		Number of Missing Observations	0
Minimum	795	Mean	1482
Maximum	5840	Median	1260
SD	944.3	Std. Error of Mean	181.7
Coefficient of Variation	0.637	Skewness	4.051

Normal GOF Test

Shapiro Wilk Test Statistic	0.535	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.286	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1792	95% Adjusted-CLT UCL (Chen-1995)	1932
		95% Modified-t UCL (Johnson-1978)	1816

Gamma GOF Test

A-D Test Statistic	1.937	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.747	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.216	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.169	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics

k hat (MLE)	5.223	k star (bias corrected MLE)	4.667
Theta hat (MLE)	283.7	Theta star (bias corrected MLE)	317.5
nu hat (MLE)	282	nu star (bias corrected)	252
MLE Mean (bias corrected)	1482	MLE Sd (bias corrected)	686
		Approximate Chi Square Value (0.05)	216.3
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	214.2

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	1727	95% Adjusted Gamma UCL (use when n<50)	1744
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.826	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.172	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.171	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.678	Mean of logged Data	7.202
Maximum of Logged Data	8.672	SD of logged Data	0.393
Assuming Lognormal Distribution			
95% H-UCL	1677	90% Chebyshev (MVUE) UCL	1783
95% Chebyshev (MVUE) UCL	1935	97.5% Chebyshev (MVUE) UCL	2147
99% Chebyshev (MVUE) UCL	2563		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1781	95% Jackknife UCL	1792
95% Standard Bootstrap UCL	1785	95% Bootstrap-t UCL	2208
95% Hall's Bootstrap UCL	2936	95% Percentile Bootstrap UCL	1803
95% BCA Bootstrap UCL	2001		
90% Chebyshev(Mean, Sd) UCL	2027	95% Chebyshev(Mean, Sd) UCL	2274
97.5% Chebyshev(Mean, Sd) UCL	2617	99% Chebyshev(Mean, Sd) UCL	3290
Suggested UCL to Use			
95% Student's-t UCL	1792	or 95% Modified-t UCL	1816
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals (ug/l)***sodium***7440-23-5***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	194
		Number of Missing Observations	0
Minimum	2600000	Mean	6835304
Maximum	9650000	Median	6920000
SD	782281	Std. Error of Mean	41116
Coefficient of Variation	0.114	Skewness	-1.325
Normal GOF Test			
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.112	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	6903107	95% Adjusted-CLT UCL (Chen-1995)	6899874
		95% Modified-t UCL (Johnson-1978)	6902630
Gamma GOF Test			
A-D Test Statistic	12.13	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.132	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	64.81	k star (bias corrected MLE)	64.27
Theta hat (MLE)	105472	Theta star (bias corrected MLE)	106351
nu hat (MLE)	46920	nu star (bias corrected)	46533
MLE Mean (bias corrected)	6835304	MLE Sd (bias corrected)	852607
		Approximate Chi Square Value (0.05)	46032
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	46030
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	6909646	95% Adjusted Gamma UCL (use when n<50)	6909939
Lognormal GOF Test			

Shapiro Wilk Test Statistic	0.821	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.144	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	14.77	Mean of logged Data	15.73
Maximum of Logged Data	16.08	SD of logged Data	0.131
Assuming Lognormal Distribution			
95% H-UCL	6920295	90% Chebyshev (MVUE) UCL	6983066
95% Chebyshev (MVUE) UCL	7047402	97.5% Chebyshev (MVUE) UCL	7136698
99% Chebyshev (MVUE) UCL	7312104		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	6902933	95% Jackknife UCL	6903107
95% Standard Bootstrap UCL	6903354	95% Bootstrap-t UCL	6901464
95% Hall's Bootstrap UCL	6896024	95% Percentile Bootstrap UCL	6904337
95% BCA Bootstrap UCL	6896713		
90% Chebyshev(Mean, Sd) UCL	6958651	95% Chebyshev(Mean, Sd) UCL	7014523
97.5% Chebyshev(Mean, Sd) UCL	7092072	99% Chebyshev(Mean, Sd) UCL	7244400
Suggested UCL to Use			
95% Student's-t UCL	6903107	or 95% Modified-t UCL	6902630
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE_MDL (metals (ug/l)***thallium***7440-28-0***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	19
Number of Detects	18	Number of Non-Detects	344
Number of Distinct Detects	15	Number of Distinct Non-Detects	5
Minimum Detect	0.3	Minimum Non-Detect	0.03
Maximum Detect	27.8	Maximum Non-Detect	8
Variance Detects	91.35	Percent Non-Detects	95.03%
Mean Detects	12.38	SD Detects	9.557
Median Detects	8.8	CV Detects	0.772
Skewness Detects	0.419	Kurtosis Detects	-1.254
Mean of Logged Detects	1.997	SD of Logged Detects	1.321
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.893	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.234	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.646	Standard Error of Mean	0.183
SD	3.391	95% KM (BCA) UCL	97.70%
95% KM (t) UCL	0.949	95% KM (Percentile Bootstrap) UCL	0.963
95% KM (z) UCL	0.948	95% KM Bootstrap t UCL	1.024
90% KM Chebyshev UCL	1.197	95% KM Chebyshev UCL	1.446
97.5% KM Chebyshev UCL	1.792	99% KM Chebyshev UCL	2.472
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.607	Anderson-Darling GOF Test	
5% A-D Critical Value	0.765	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.201	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.209	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.099	k star (bias corrected MLE)	0.953
Theta hat (MLE)	11.27	Theta star (bias corrected MLE)	12.99
nu hat (MLE)	39.57	nu star (bias corrected)	34.31
MLE Mean (bias corrected)	12.38	MLE Sd (bias corrected)	12.68

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0363	nu hat (KM)	26.3
Approximate Chi Square Value (26.30, α)	15.61	Adjusted Chi Square Value (26.30, β)	15.58
95% Gamma Approximate KM-UCL (use when n>=50)	1.089	95% Gamma Adjusted KM-UCL (use when n<50)	1.091
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.629
Maximum	27.8	Median	0.01
SD	3.399	CV	5.4
k hat (MLE)	0.195	k star (bias corrected MLE)	0.195
Theta hat (MLE)	3.229	Theta star (bias corrected MLE)	3.225
nu hat (MLE)	141.1	nu star (bias corrected)	141.3
MLE Mean (bias corrected)	0.629	MLE Sd (bias corrected)	1.425
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (141.30, α)	114.8	Adjusted Chi Square Value (141.30, β)	114.7
95% Gamma Approximate UCL (use when n>=50)	0.775	95% Gamma Adjusted UCL (use when n<50)	0.775

Lognormal GOF Test on Detected Observations Only	
Shapiro Wilk Test Statistic	0.853 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.897 Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.262 Lilliefors GOF Test
5% Lilliefors Critical Value	0.209 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.704	Mean in Log Scale	-4.774
SD in Original Scale	3.393	SD in Log Scale	3.231
95% t UCL (assumes normality of ROS data)	0.998	95% Percentile Bootstrap UCL	1.004
95% BCA Bootstrap UCL	1.08	95% Bootstrap t UCL	1.124
95% H-UCL (Log ROS)	3.389		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.057	Mean in Log Scale	-1.218
SD in Original Scale	3.389	SD in Log Scale	1.312
95% t UCL (Assumes normality)	1.351	95% H-Stat UCL	0.826
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	0.949	95% GROS Approximate Gamma UCL	0.775
95% Approximate Gamma KM-UCL	1.089		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***tin***7440-31-5***ug/l****)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	26
Number of Detects	34	Number of Non-Detects	328
Number of Distinct Detects	22	Number of Distinct Non-Detects	5
Minimum Detect	0.7	Minimum Non-Detect	0.6
Maximum Detect	15.4	Maximum Non-Detect	20
Variance Detects	10.05	Percent Non-Detects	90.61%
Mean Detects	2.585	SD Detects	3.17
Median Detects	1.35	CV Detects	1.226
Skewness Detects	2.831	Kurtosis Detects	860.80%
Mean of Logged Detects	0.543	SD of Logged Detects	0.807

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.605 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.933 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.304 Lilliefors GOF Test
5% Lilliefors Critical Value	0.152 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.819	Standard Error of Mean	6.35%
SD	1.15	95% KM (BCA) UCL	0.942

95% KM (t) UCL	0.923	95% KM (Percentile Bootstrap) UCL	0.933
95% KM (z) UCL	0.923	95% KM Bootstrap t UCL	0.984
90% KM Chebyshev UCL	1.009	95% KM Chebyshev UCL	1.095
97.5% KM Chebyshev UCL	1.215	99% KM Chebyshev UCL	1.45
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.767	Anderson-Darling GOF Test	
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.248	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.154	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.372	k star (bias corrected MLE)	1.271
Theta hat (MLE)	1.884	Theta star (bias corrected MLE)	2.034
nu hat (MLE)	93.32	nu star (bias corrected)	86.42
MLE Mean (bias corrected)	2.585	MLE Sd (bias corrected)	2.293
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.507	nu hat (KM)	366.9
Approximate Chi Square Value (366.93, α)	323.5	Adjusted Chi Square Value (366.93, β)	323.4
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.929	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.929
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.292
Maximum	15.4	Median	0.01
SD	1.244	CV	4.26
k hat (MLE)	0.256	k star (bias corrected MLE)	0.256
Theta hat (MLE)	1.14	Theta star (bias corrected MLE)	1.141
nu hat (MLE)	185.5	nu star (bias corrected)	185.3
MLE Mean (bias corrected)	0.292	MLE Sd (bias corrected)	0.577
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (185.33, α)	154.8	Adjusted Chi Square Value (185.33, β)	154.7
95% Gamma Approximate UCL (use when $n \geq 50$)	0.35	95% Gamma Adjusted UCL (use when $n < 50$)	0.35
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.86	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.933	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.185	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.399	Mean in Log Scale	-2.372
SD in Original Scale	1.218	SD in Log Scale	1.706
95% t UCL (assumes normality of ROS data)	0.504	95% Percentile Bootstrap UCL	0.513
95% BCA Bootstrap UCL	0.552	95% Bootstrap t UCL	0.56
95% H-UCL (Log ROS)	0.513		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.375	Mean in Log Scale	-0.356
SD in Original Scale	2.241	SD in Log Scale	1.032
95% t UCL (Assumes normality)	1.569	95% H-Stat UCL	1.341
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.923	95% KM (% Bootstrap) UCL	0.933
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals (ug/l)***vanadium***7440-62-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	43
Number of Detects	167	Number of Non-Detects	195
Number of Distinct Detects	43	Number of Distinct Non-Detects	4
Minimum Detect	1	Minimum Non-Detect	1
Maximum Detect	13.9	Maximum Non-Detect	5

Variance Detects	4.064	Percent Non-Detects	53.87%
Mean Detects	2.568	SD Detects	2.016
Median Detects	2	CV Detects	0.785
Skewness Detects	3.282	Kurtosis Detects	12.61
Mean of Logged Detects	0.775	SD of Logged Detects	0.518
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.622	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.274	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0686	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.901	Standard Error of Mean	8.50%
SD	1.554	95% KM (BCA) UCL	2.038
95% KM (t) UCL	2.042	95% KM (Percentile Bootstrap) UCL	2.046
95% KM (z) UCL	2.041	95% KM Bootstrap t UCL	2.07
90% KM Chebyshev UCL	2.156	95% KM Chebyshev UCL	2.272
97.5% KM Chebyshev UCL	2.432	99% KM Chebyshev UCL	2.747
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.752	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.187	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0726	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.136	k star (bias corrected MLE)	3.084
Theta hat (MLE)	0.819	Theta star (bias corrected MLE)	0.833
nu hat (MLE)	1047	nu star (bias corrected)	1030
MLE Mean (bias corrected)	2.568	MLE Sd (bias corrected)	1.462
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.498	nu hat (KM)	1084
Approximate Chi Square Value (N/A, α)	1009	Adjusted Chi Square Value (N/A, β)	1009
95% Gamma Approximate KM-UCL (use when n>=50)	2.044	95% Gamma Adjusted KM-UCL (use when n<50)	2.044
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.571
Maximum	13.9	Median	1.3
SD	1.836	CV	1.169
k hat (MLE)	0.494	k star (bias corrected MLE)	0.492
Theta hat (MLE)	3.177	Theta star (bias corrected MLE)	3.192
nu hat (MLE)	357.9	nu star (bias corrected)	356.3
MLE Mean (bias corrected)	1.571	MLE Sd (bias corrected)	2.239
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (356.26, α)	313.5	Adjusted Chi Square Value (356.26, β)	313.4
95% Gamma Approximate UCL (use when n>=50)	1.785	95% Gamma Adjusted UCL (use when n<50)	1.786
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.133	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0686	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.806	Mean in Log Scale	0.341
SD in Original Scale	1.636	SD in Log Scale	0.682
95% t UCL (assumes normality of ROS data)	1.948	95% Percentile Bootstrap UCL	1.95
95% BCA Bootstrap UCL	1.971	95% Bootstrap t UCL	1.977
95% H-UCL (Log ROS)	1.9		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.987	Mean in Log Scale	0.457
SD in Original Scale	1.614	SD in Log Scale	0.672
95% t UCL (Assumes normality)	2.127	95% H-Stat UCL	2.116
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	2.042	95% KM (% Bootstrap) UCL	2.046

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals (ug/l)***zinc***7440-66-6***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	71
Number of Detects	88	Number of Non-Detects	274
Number of Distinct Detects	68	Number of Distinct Non-Detects	4
Minimum Detect	7.4	Minimum Non-Detect	11.9
Maximum Detect	62	Maximum Non-Detect	60
Variance Detects	67.28	Percent Non-Detects	75.69%
Mean Detects	18.6	SD Detects	8.203
Median Detects	15.8	CV Detects	0.441
Skewness Detects	2.384	Kurtosis Detects	8.651
Mean of Logged Detects	2.851	SD of Logged Detects	0.365
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.809	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	1.11E-16	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.17	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0944	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	12.48	Standard Error of Mean	51.70%
SD	6.296	95% KM (BCA) UCL	13.4
95% KM (t) UCL	13.33	95% KM (Percentile Bootstrap) UCL	13.37
95% KM (z) UCL	13.33	95% KM Bootstrap t UCL	13.42
90% KM Chebyshev UCL	14.03	95% KM Chebyshev UCL	14.73
97.5% KM Chebyshev UCL	15.71	99% KM Chebyshev UCL	17.62
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.13E+00	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.134	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0954	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	7.062	k star (bias corrected MLE)	6.829
Theta hat (MLE)	2.634	Theta star (bias corrected MLE)	2.724
nu hat (MLE)	1243	nu star (bias corrected)	1202
MLE Mean (bias corrected)	18.6	MLE Sd (bias corrected)	7.118
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.93	nu hat (KM)	2846
Approximate Chi Square Value (N/A, α)	2723	Adjusted Chi Square Value (N/A, β)	2722
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	13.05	95% Gamma Adjusted KM-UCL (use when $n < 50$)	13.05
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	9.041
Maximum	62	Median	7.462
SD	8.688	CV	0.961
k hat (MLE)	0.466	k star (bias corrected MLE)	0.464
Theta hat (MLE)	19.38	Theta star (bias corrected MLE)	19.47
nu hat (MLE)	337.7	nu star (bias corrected)	336.2
MLE Mean (bias corrected)	9.041	MLE Sd (bias corrected)	13.27
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (336.22, α)	294.7	Adjusted Chi Square Value (336.22, β)	294.6
95% Gamma Approximate UCL (use when $n \geq 50$)	10.31	95% Gamma Adjusted UCL (use when $n < 50$)	10.32
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.11	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0944	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	11.52	Mean in Log Scale	2.302
SD in Original Scale	6.89	SD in Log Scale	0.527
95% t UCL (assumes normality of ROS data)	12.12	95% Percentile Bootstrap UCL	12.13
95% BCA Bootstrap UCL	12.17	95% Bootstrap t UCL	12.18

95% H-UCL (Log ROS)	12.07		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	15.77	Mean in Log Scale	2.501
SD in Original Scale	10.97	SD in Log Scale	0.726
95% t UCL (Assumes normality)	16.73	95% H-Stat UCL	17.07
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	13.33	95% KM (% Bootstrap) UCL	13.37

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals, dissolved (ug/l)***aluminum***7429-90-5***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	27
Number of Detects	38	Number of Non-Detects	324
Number of Distinct Detects	25	Number of Distinct Non-Detects	4
Minimum Detect	4	Minimum Non-Detect	2
Maximum Detect	280	Maximum Non-Detect	100
Variance Detects	2102	Percent Non-Detects	89.50%
Mean Detects	34.82	SD Detects	45.84
Median Detects	26	CV Detects	1.317
Skewness Detects	4.393	Kurtosis Detects	22.97
Mean of Logged Detects	3.082	SD of Logged Detects	0.981

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.545	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.29	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	11.33	Standard Error of Mean	162.10%
SD	18.05	95% KM (BCA) UCL	14.14
95% KM (t) UCL	14.01	95% KM (Percentile Bootstrap) UCL	14.21
95% KM (z) UCL	14	95% KM Bootstrap t UCL	15.11
90% KM Chebyshev UCL	16.2	95% KM Chebyshev UCL	18.4
97.5% KM Chebyshev UCL	21.46	99% KM Chebyshev UCL	27.46

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.153	Anderson-Darling GOF Test	
5% A-D Critical Value	0.773	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.154	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.147	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.209	k star (bias corrected MLE)	1.131
Theta hat (MLE)	28.8	Theta star (bias corrected MLE)	30.79
nu hat (MLE)	91.86	nu star (bias corrected)	85.95
MLE Mean (bias corrected)	34.82	MLE Sd (bias corrected)	32.74

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.394	nu hat (KM)	285.6
Approximate Chi Square Value (285.58, α)	247.4	Adjusted Chi Square Value (285.58, β)	247.3
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	13.08	95% Gamma Adjusted KM-UCL (use when $n < 50$)	13.09

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	8.21
Maximum	280	Median	0.01
SD	19.83	CV	2.416
k hat (MLE)	0.193	k star (bias corrected MLE)	0.194
Theta hat (MLE)	42.43	Theta star (bias corrected MLE)	42.38
nu hat (MLE)	140.1	nu star (bias corrected)	140.3
MLE Mean (bias corrected)	8.21	MLE Sd (bias corrected)	1865.00%

	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (140.25, α)	113.9 Adjusted Chi Square Value (140.25, β)	113.8
95% Gamma Approximate UCL (use when $n \geq 50$)	10.11 95% Gamma Adjusted UCL (use when $n < 50$)	10.12
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.917 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938 Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.169 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	11.52 Mean in Log Scale	1.999
SD in Original Scale	18.01 SD in Log Scale	0.907
95% t UCL (assumes normality of ROS data)	13.09 95% Percentile Bootstrap UCL	13.12
95% BCA Bootstrap UCL	13.74 95% Bootstrap t UCL	13.99
95% H-UCL (Log ROS)	12.28	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	22.97 Mean in Log Scale	2.806
SD in Original Scale	22.77 SD in Log Scale	0.77
95% t UCL (Assumes normality)	24.94 95% H-Stat UCL	24.07
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	14.01 95% KM (% Bootstrap) UCL	14.21
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (metals, dissolved (ug/l)***antimony***7440-36-0***ug/l****d)		
General Statistics		
Total Number of Observations	362 Number of Distinct Observations	66
Number of Detects	95 Number of Non-Detects	267
Number of Distinct Detects	63 Number of Distinct Non-Detects	6
Minimum Detect	0.8 Minimum Non-Detect	0.1
Maximum Detect	60.5 Maximum Non-Detect	16
Variance Detects	134 Percent Non-Detects	73.76%
Mean Detects	7.9 SD Detects	11.58
Median Detects	4.3 CV Detects	1.465
Skewness Detects	3.165 Kurtosis Detects	10.34
Mean of Logged Detects	1.474 SD of Logged Detects	1.019
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.573 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.27 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0909 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2.398 Standard Error of Mean	36.40%
SD	6.805 95% KM (BCA) UCL	3.079
95% KM (t) UCL	2.999 95% KM (Percentile Bootstrap) UCL	3.008
95% KM (z) UCL	2.998 95% KM Bootstrap t UCL	3.191
90% KM Chebyshev UCL	3.491 95% KM Chebyshev UCL	3.986
97.5% KM Chebyshev UCL	4.673 99% KM Chebyshev UCL	6.023
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.544 Anderson-Darling GOF Test	
5% A-D Critical Value	0.784 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.13 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0947 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.977 k star (bias corrected MLE)	0.953
Theta hat (MLE)	8.089 Theta star (bias corrected MLE)	8.291
nu hat (MLE)	185.6 nu star (bias corrected)	181
MLE Mean (bias corrected)	7.9 MLE Sd (bias corrected)	8.093
Gamma Kaplan-Meier (KM) Statistics		

k hat (KM)	0.124	nu hat (KM)	89.93
Approximate Chi Square Value (89.93, α)	69.07	Adjusted Chi Square Value (89.93, β)	68.99
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	3.123	95% Gamma Adjusted KM-UCL (use when $n < 50$)	3.126
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	2.222
Maximum	60.5	Median	0.01
SD	6.861	CV	3.088
k hat (MLE)	0.205	k star (bias corrected MLE)	0.206
Theta hat (MLE)	10.82	Theta star (bias corrected MLE)	10.81
nu hat (MLE)	148.7	nu star (bias corrected)	148.8
MLE Mean (bias corrected)	2.222	MLE Sd (bias corrected)	4.901
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (148.80, α)	121.6	Adjusted Chi Square Value (148.80, β)	121.5
95% Gamma Approximate UCL (use when $n \geq 50$)	2.719	95% Gamma Adjusted UCL (use when $n < 50$)	2.721
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0983	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0909	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.485	Mean in Log Scale	-0.599
SD in Original Scale	6.767	SD in Log Scale	1.76
95% t UCL (assumes normality of ROS data)	3.071	95% Percentile Bootstrap UCL	3.088
95% BCA Bootstrap UCL	3.194	95% Bootstrap t UCL	3.278
95% H-UCL (Log ROS)	3.369		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.354	Mean in Log Scale	0.401
SD in Original Scale	6.691	SD in Log Scale	1.261
95% t UCL (Assumes normality)	3.934	95% H-Stat UCL	3.866
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	3.079		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals, dissolved (ug/l)***arsenic***7440-38-2***ug/l***d)			
General Statistics			
Total Number of Observations	359	Number of Distinct Observations	131
Number of Detects	325	Number of Non-Detects	34
Number of Distinct Detects	129	Number of Distinct Non-Detects	3
Minimum Detect	0.29	Minimum Non-Detect	0.09
Maximum Detect	5.9	Maximum Non-Detect	4
Variance Detects	0.353	Percent Non-Detects	9.47%
Mean Detects	1.154	SD Detects	0.594
Median Detects	1.04	CV Detects	0.515
Skewness Detects	4.094	Kurtosis Detects	24.04
Mean of Logged Detects	0.0607	SD of Logged Detects	0.383
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.672	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0491	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.093	Standard Error of Mean	3.31%
SD	0.619	95% KM (BCA) UCL	1.153
95% KM (t) UCL	1.148	95% KM (Percentile Bootstrap) UCL	1.148
95% KM (z) UCL	1.147	95% KM Bootstrap t UCL	1.153
90% KM Chebyshev UCL	1.192	95% KM Chebyshev UCL	1.237
97.5% KM Chebyshev UCL	1.3	99% KM Chebyshev UCL	1.423

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	8.468	Anderson-Darling GOF Test
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.121	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0505	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	6.236	k star (bias corrected MLE) 6.181
Theta hat (MLE)	0.185	Theta star (bias corrected MLE) 0.187
nu hat (MLE)	4053	nu star (bias corrected) 4017
MLE Mean (bias corrected)	1.154	MLE Sd (bias corrected) 0.464
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	3.113	nu hat (KM) 2235
Approximate Chi Square Value (N/A, α)	2126	Adjusted Chi Square Value (N/A, β) 2126
95% Gamma Approximate KM-UCL (use when n>=50)	1.149	95% Gamma Adjusted KM-UCL (use when n<50) 1.149
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0493	Mean 1.102
Maximum	5.9	Median 1.03
SD	0.608	CV 0.552
k hat (MLE)	4.208	k star (bias corrected MLE) 4.175
Theta hat (MLE)	0.262	Theta star (bias corrected MLE) 0.264
nu hat (MLE)	3021	nu star (bias corrected) 2998
MLE Mean (bias corrected)	1.102	MLE Sd (bias corrected) 0.539
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2871	Adjusted Chi Square Value (N/A, β) 2871
95% Gamma Approximate UCL (use when n>=50)	1.15	95% Gamma Adjusted UCL (use when n<50) 1.15
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0911	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0491	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.112	Mean in Log Scale 0.0121
SD in Original Scale	0.591	SD in Log Scale 0.42
95% t UCL (assumes normality of ROS data)	1.164	95% Percentile Bootstrap UCL 1.164
95% BCA Bootstrap UCL	1.174	95% Bootstrap t UCL 1.173
95% H-UCL (Log ROS)	1.149	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	1.128	Mean in Log Scale -0.0822
SD in Original Scale	0.642	SD in Log Scale 0.811
95% t UCL (Assumes normality)	1.183	95% H-Stat UCL 1.394
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	1.153	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (metals, dissolved (ug/l)***barium***7440-39-3***ug/l***d)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 160
Number of Detects	360	Number of Non-Detects 2
Number of Distinct Detects	159	Number of Distinct Non-Detects 1
Minimum Detect	7.4	Minimum Non-Detect 5
Maximum Detect	64.4	Maximum Non-Detect 5
Variance Detects	36.02	Percent Non-Detects 0.55%
Mean Detects	19.78	SD Detects 6.001
Median Detects	18.8	CV Detects 0.303
Skewness Detects	1.988	Kurtosis Detects 9.828
Mean of Logged Detects	2.945	SD of Logged Detects 0.28
Normal GOF Test on Detects Only		

Shapiro Wilk Test Statistic	0.899	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0856	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	19.7	Standard Error of Mean	32.00%
SD	6.076	95% KM (BCA) UCL	20.23
95% KM (t) UCL	20.23	95% KM (Percentile Bootstrap) UCL	20.24
95% KM (z) UCL	20.22	95% KM Bootstrap t UCL	20.28
90% KM Chebyshev UCL	20.66	95% KM Chebyshev UCL	21.09
97.5% KM Chebyshev UCL	21.69	99% KM Chebyshev UCL	22.88
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.68	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0464	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0479	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	12.64	k star (bias corrected MLE)	12.54
Theta hat (MLE)	1.564	Theta star (bias corrected MLE)	1.577
nu hat (MLE)	9104	nu star (bias corrected)	9030
MLE Mean (bias corrected)	19.78	MLE Sd (bias corrected)	5.585
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	10.51	nu hat (KM)	7609
Approximate Chi Square Value (N/A, α)	7407	Adjusted Chi Square Value (N/A, β)	7406
95% Gamma Approximate KM-UCL (use when n>=50)	20.23	95% Gamma Adjusted KM-UCL (use when n<50)	20.24
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	6.572	Mean	19.71
Maximum	64.4	Median	18.8
SD	6.061	CV	0.308
k hat (MLE)	12.05	k star (bias corrected MLE)	11.96
Theta hat (MLE)	1.635	Theta star (bias corrected MLE)	1.648
nu hat (MLE)	8727	nu star (bias corrected)	8656
MLE Mean (bias corrected)	19.71	MLE Sd (bias corrected)	5.7
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	8441	Adjusted Chi Square Value (N/A, β)	8440
95% Gamma Approximate UCL (use when n>=50)	20.21	95% Gamma Adjusted UCL (use when n<50)	20.21
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0374	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	19.72	Mean in Log Scale	2.94
SD in Original Scale	6.043	SD in Log Scale	0.285
95% t UCL (assumes normality of ROS data)	20.24	95% Percentile Bootstrap UCL	20.25
95% BCA Bootstrap UCL	20.28	95% Bootstrap t UCL	20.24
95% H-UCL (Log ROS)	20.22		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	2.937	95% H-UCL (KM -Log)	20.24
KM SD (logged)	0.296	95% Critical H Value (KM-Log)	1.71
KM Standard Error of Mean (logged)	0.0156		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	19.68	Mean in Log Scale	2.933
SD in Original Scale	6.121	SD in Log Scale	0.317
95% t UCL (Assumes normality)	20.21	95% H-Stat UCL	20.34
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	20.23	95% GROS Approximate Gamma UCL	20.21
95% Approximate Gamma KM-UCL	20.23		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals, dissolved (ug/l)***cadmium***7440-43-9***ug/l***d)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 6
Number of Detects	8	Number of Non-Detects 354
Number of Distinct Detects	2	Number of Distinct Non-Detects 5
Minimum Detect	0.1	Minimum Non-Detect 0.05
Maximum Detect	2.5	Maximum Non-Detect 2.5
Variance Detects	0.72	Percent Non-Detects 97.79%
Mean Detects	0.4	SD Detects 0.849
Median Detects	0.1	CV Detects 2.121
Skewness Detects	2.828	Kurtosis Detects 8
Mean of Logged Detects	-1.9	SD of Logged Detects 1.138
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.419	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.513	Lilliefors GOF Test
5% Lilliefors Critical Value	0.313	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0817	Standard Error of Mean 1.01%
SD	0.13	95% KM (BCA) UCL N/A
95% KM (t) UCL	0.0983	95% KM (Percentile Bootstrap) UCL N/A
95% KM (z) UCL	0.0983	95% KM Bootstrap t UCL N/A
90% KM Chebyshev UCL	0.112	95% KM Chebyshev UCL 0.126
97.5% KM Chebyshev UCL	0.145	99% KM Chebyshev UCL 0.182
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.567	Anderson-Darling GOF Test
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.545	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.307	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.624	k star (bias corrected MLE) 0.474
Theta hat (MLE)	0.641	Theta star (bias corrected MLE) 0.845
nu hat (MLE)	9.989	nu star (bias corrected) 7.577
MLE Mean (bias corrected)	0.4	MLE Sd (bias corrected) 0.581
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.397	nu hat (KM) 287.3
Approximate Chi Square Value (287.25, α)	249	Adjusted Chi Square Value (287.25, β) 248.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.0943	95% Gamma Adjusted KM-UCL (use when n<50) 0.0943
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.116
Maximum	2.5	Median 0.01
SD	0.268	CV 2.31
k hat (MLE)	0.422	k star (bias corrected MLE) 0.42
Theta hat (MLE)	0.275	Theta star (bias corrected MLE) 0.276
nu hat (MLE)	305.4	nu star (bias corrected) 304.2
MLE Mean (bias corrected)	0.116	MLE Sd (bias corrected) 0.179
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (304.21, α)	264.8	Adjusted Chi Square Value (304.21, β) 264.7
95% Gamma Approximate UCL (use when n>=50)	0.133	95% Gamma Adjusted UCL (use when n<50) 0.133
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.419	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.513	Lilliefors GOF Test
5% Lilliefors Critical Value	0.313	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0882	Mean in Log Scale -3.009
SD in Original Scale	0.159	SD in Log Scale 1.054
95% t UCL (assumes normality of ROS data)	0.102	95% Percentile Bootstrap UCL 0.103

95% BCA Bootstrap UCL	0.108	95% Bootstrap t UCL	0.111
95% H-UCL (Log ROS)	0.0971		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.519	Mean in Log Scale	-0.99
SD in Original Scale	0.448	SD in Log Scale	0.817
95% t UCL (Assumes normality)	0.557	95% H-Stat UCL	0.565
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	N/A		
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals, dissolved (ug/l)***calcium***7440-70-2***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	94
		Number of Missing Observations	0
Minimum	156000	Mean	252688
Maximum	352000	Median	256000
SD	25551	Std. Error of Mean	1343
Coefficient of Variation	0.101	Skewness	-0.911
Normal GOF Test			
Shapiro Wilk Test Statistic	0.933	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0998	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	254902	95% Adjusted-CLT UCL (Chen-1995)	254828
		95% Modified-t UCL (Johnson-1978)	254892
Gamma GOF Test			
A-D Test Statistic	8.554	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.117	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	89.57	k star (bias corrected MLE)	88.83
Theta hat (MLE)	2821	Theta star (bias corrected MLE)	2845
nu hat (MLE)	64847	nu star (bias corrected)	64311
MLE Mean (bias corrected)	252688	MLE Sd (bias corrected)	26811
		Approximate Chi Square Value (0.05)	63723
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	63720
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	255023	95% Adjusted Gamma UCL (use when n<50)	255032
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.884	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	11.96	Mean of logged Data	12.43
Maximum of Logged Data	12.77	SD of logged Data	0.109
Assuming Lognormal Distribution			
95% H-UCL	255184	90% Chebyshev (MVUE) UCL	257112
95% Chebyshev (MVUE) UCL	259081	97.5% Chebyshev (MVUE) UCL	261814
99% Chebyshev (MVUE) UCL	267182		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs			
95% CLT UCL	254897	95% Jackknife UCL	254902
95% Standard Bootstrap UCL	254875	95% Bootstrap-t UCL	254901
95% Hall's Bootstrap UCL	254789	95% Percentile Bootstrap UCL	254895
95% BCA Bootstrap UCL	254948		
90% Chebyshev(Mean, Sd) UCL	256717	95% Chebyshev(Mean, Sd) UCL	258542
97.5% Chebyshev(Mean, Sd) UCL	261075	99% Chebyshev(Mean, Sd) UCL	266050

Suggested UCL to Use			
95% Student's-t UCL	254902	or 95% Modified-t UCL	254892

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

RESULT_VALUE_MDL (metals, dissolved (ug/l)***chromium***7440-47-3***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	34
Number of Detects	58	Number of Non-Detects	304
Number of Distinct Detects	32	Number of Distinct Non-Detects	5
Minimum Detect	0.3	Minimum Non-Detect	0.2
Maximum Detect	6.5	Maximum Non-Detect	10
Variance Detects	3.288	Percent Non-Detects	83.98%
Mean Detects	2.728	SD Detects	1.813
Median Detects	2.15	CV Detects	0.665
Skewness Detects	0.22	Kurtosis Detects	-1.127
Mean of Logged Detects	0.654	SD of Logged Detects	0.977

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.912	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	2.69E-04	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.149	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.116	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.951	Standard Error of Mean	8.53%
SD	1.294	95% KM (BCA) UCL	1.099
95% KM (t) UCL	1.091	95% KM (Percentile Bootstrap) UCL	1.088
95% KM (z) UCL	1.091	95% KM Bootstrap t UCL	1.109
90% KM Chebyshev UCL	1.206	95% KM Chebyshev UCL	1.322
97.5% KM Chebyshev UCL	1.483	99% KM Chebyshev UCL	1.799

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.25E+00	Anderson-Darling GOF Test	
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.163	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.119	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.576	k star (bias corrected MLE)	1.506
Theta hat (MLE)	1.731	Theta star (bias corrected MLE)	1.811
nu hat (MLE)	182.8	nu star (bias corrected)	174.7
MLE Mean (bias corrected)	2.728	MLE Sd (bias corrected)	2.223

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.54	nu hat (KM)	390.9
Approximate Chi Square Value (390.93, α)	346.1	Adjusted Chi Square Value (390.93, β)	345.9
95% Gamma Approximate KM-UCL (use when n>=50)	1.074	95% Gamma Adjusted KM-UCL (use when n<50)	1.074

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.015
Maximum	6.5	Median	0.465
SD	1.334	CV	1.314
k hat (MLE)	0.424	k star (bias corrected MLE)	0.422
Theta hat (MLE)	2.393	Theta star (bias corrected MLE)	2.402

nu hat (MLE)	307.1	nu star (bias corrected)	305.9
MLE Mean (bias corrected)	1.015	MLE Sd (bias corrected)	1.561
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (305.85, α)	266.3	Adjusted Chi Square Value (305.85, β)	266.2
95% Gamma Approximate UCL (use when n>=50)	1.165	95% Gamma Adjusted UCL (use when n<50)	1.166

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.184 Lilliefors GOF Test
5% Lilliefors Critical Value	0.116 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.047	Mean in Log Scale	-0.495
SD in Original Scale	1.247	SD in Log Scale	1.047
95% t UCL (assumes normality of ROS data)	1.155	95% Percentile Bootstrap UCL	1.157
95% BCA Bootstrap UCL	1.158	95% Bootstrap t UCL	1.159
95% H-UCL (Log ROS)	1.188		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.276	Mean in Log Scale	0.472
SD in Original Scale	1.871	SD in Log Scale	0.841
95% t UCL (Assumes normality)	2.438	95% H-Stat UCL	2.496
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	1.091	95% KM (% Bootstrap) UCL	1.088

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals, dissolved (ug/l)***cobalt***7440-48-4***ug/l****d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	6
Number of Detects	14	Number of Non-Detects	348
Number of Distinct Detects	3	Number of Distinct Non-Detects	3
Minimum Detect	0.2	Minimum Non-Detect	1
Maximum Detect	0.4	Maximum Non-Detect	10
Variance Detects	0.00533	Percent Non-Detects	96.13%
Mean Detects	0.293	SD Detects	0.073
Median Detects	0.3	CV Detects	0.249
Skewness Detects	0.113	Kurtosis Detects	-0.856
Mean of Logged Detects	-1.258	SD of Logged Detects	0.258

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.822 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.874 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.253 Lilliefors GOF Test
5% Lilliefors Critical Value	0.237 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.293	Standard Error of Mean	1.95%
SD	0.0703	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.325	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.325	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.351	95% KM Chebyshev UCL	0.378
97.5% KM Chebyshev UCL	0.415	99% KM Chebyshev UCL	0.487

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.221	Anderson-Darling GOF Test	
5% A-D Critical Value	0.734	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.286	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.228	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	16.77	k star (bias corrected MLE)	13.23
Theta hat (MLE)	0.0175	Theta star (bias corrected MLE)	0.0221
nu hat (MLE)	469.7	nu star (bias corrected)	370.4
MLE Mean (bias corrected)	0.293	MLE Sd (bias corrected)	0.0805

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	17.33	nu hat (KM)	12547
Approximate Chi Square Value (N/A, α)	12287	Adjusted Chi Square Value (N/A, β)	12286
95% Gamma Approximate KM-UCL (use when n>=50)	0.299	95% Gamma Adjusted KM-UCL (use when n<50)	0.299
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.127	Mean	0.294
Maximum	0.538	Median	0.29
SD	0.0756	CV	0.257
k hat (MLE)	15.03	k star (bias corrected MLE)	14.91
Theta hat (MLE)	0.0196	Theta star (bias corrected MLE)	0.0197
nu hat (MLE)	10882	nu star (bias corrected)	10793
MLE Mean (bias corrected)	0.294	MLE Sd (bias corrected)	0.0762
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	10553	Adjusted Chi Square Value (N/A, β)	10552
95% Gamma Approximate UCL (use when n>=50)	0.301	95% Gamma Adjusted UCL (use when n<50)	0.301
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.811	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.298	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.294	Mean in Log Scale	-1.258
SD in Original Scale	0.0787	SD in Log Scale	0.265
95% t UCL (assumes normality of ROS data)	0.301	95% Percentile Bootstrap UCL	0.301
95% BCA Bootstrap UCL	0.302	95% Bootstrap t UCL	0.302
95% H-UCL (Log ROS)	0.301		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.246	Mean in Log Scale	-0.159
SD in Original Scale	1.18	SD in Log Scale	0.829
95% t UCL (Assumes normality)	1.348	95% H-Stat UCL	1.312
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.325	95% KM (% Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals, dissolved (ug/l)***copper***7440-50-8***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	61
Number of Detects	167	Number of Non-Detects	195
Number of Distinct Detects	60	Number of Distinct Non-Detects	6
Minimum Detect	1	Minimum Non-Detect	0.1
Maximum Detect	157.7	Maximum Non-Detect	5
Variance Detects	149.2	Percent Non-Detects	53.87%
Mean Detects	3.989	SD Detects	12.21
Median Detects	2.1	CV Detects	3.062
Skewness Detects	12.16	Kurtosis Detects	153.7
Mean of Logged Detects	0.916	SD of Logged Detects	0.71
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.189	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.403	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0686	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.146	Standard Error of Mean	44.80%
SD	8.471	95% KM (BCA) UCL	3.024
95% KM (t) UCL	2.884	95% KM (Percentile Bootstrap) UCL	2.99
95% KM (z) UCL	2.882	95% KM Bootstrap t UCL	4.308

90% KM Chebyshev UCL	3.489	95% KM Chebyshev UCL	4.098
97.5% KM Chebyshev UCL	4.943	99% KM Chebyshev UCL	6.602

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	5.99E+28	Anderson-Darling GOF Test	
5% A-D Critical Value	0.778	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.208	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.074	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	1.208	k star (bias corrected MLE)	1.19
Theta hat (MLE)	3.302	Theta star (bias corrected MLE)	3.351
nu hat (MLE)	403.5	nu star (bias corrected)	397.6
MLE Mean (bias corrected)	3.989	MLE Sd (bias corrected)	3.656

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0642	nu hat (KM)	46.45
Approximate Chi Square Value (46.45, α)	3.18E+01	Adjusted Chi Square Value (46.45, β)	31.76
95% Gamma Approximate KM-UCL (use when n>=50)	3.133	95% Gamma Adjusted KM-UCL (use when n<50)	3.138
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	2.086
Maximum	157.7	Median	1.1
SD	8.533	CV	4.091
k hat (MLE)	0.289	k star (bias corrected MLE)	0.288
Theta hat (MLE)	7.223	Theta star (bias corrected MLE)	7.237
nu hat (MLE)	209.1	nu star (bias corrected)	208.7
MLE Mean (bias corrected)	2.086	MLE Sd (bias corrected)	3.885
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (208.69, α)	176.3	Adjusted Chi Square Value (208.69, β)	176.1
95% Gamma Approximate UCL (use when n>=50)	2.47	95% Gamma Adjusted UCL (use when n<50)	2.471

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.136	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0686	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.311	Mean in Log Scale	0.178
SD in Original Scale	8.448	SD in Log Scale	1.014
95% t UCL (assumes normality of ROS data)	3.044	95% Percentile Bootstrap UCL	3.149
95% BCA Bootstrap UCL	3.694	95% Bootstrap t UCL	4.715
95% H-UCL (Log ROS)	2.239		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.538	Mean in Log Scale	0.37
SD in Original Scale	8.42	SD in Log Scale	0.977
95% t UCL (Assumes normality)	3.268	95% H-Stat UCL	2.601
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	2.884	95% KM (% Bootstrap) UCL	2.99
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals, dissolved (ug/l))***iron***7439-89-6***ug/l***d)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	69
Number of Detects	71	Number of Non-Detects	291
Number of Distinct Detects	65	Number of Distinct Non-Detects	5
Minimum Detect	21	Minimum Non-Detect	20
Maximum Detect	583	Maximum Non-Detect	650
Variance Detects	9949	Percent Non-Detects	80.39%
Mean Detects	160.9	SD Detects	99.74
Median Detects	147	CV Detects	0.62

Skewness Detects	1.676	Kurtosis Detects	4.647
Mean of Logged Detects	4.889	SD of Logged Detects	0.666
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.876	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	7.70E-08	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.146	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	75.46	Standard Error of Mean	5.802
SD	76.04	95% KM (BCA) UCL	85.28
95% KM (t) UCL	85.03	95% KM (Percentile Bootstrap) UCL	85.03
95% KM (z) UCL	85.01	95% KM Bootstrap t UCL	86.61
90% KM Chebyshev UCL	92.87	95% KM Chebyshev UCL	100.8
97.5% KM Chebyshev UCL	111.7	99% KM Chebyshev UCL	133.2
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.918	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.131	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.107	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.759	k star (bias corrected MLE)	2.651
Theta hat (MLE)	58.33	Theta star (bias corrected MLE)	60.69
nu hat (MLE)	391.7	nu star (bias corrected)	376.5
MLE Mean (bias corrected)	160.9	MLE Sd (bias corrected)	98.82
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.985	nu hat (KM)	713.1
Approximate Chi Square Value (713.05, α)	652.1	Adjusted Chi Square Value (713.05, β)	651.9
95% Gamma Approximate KM-UCL (use when n>=50)	82.52	95% Gamma Adjusted KM-UCL (use when n<50)	82.55
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	63.55
Maximum	583	Median	33.56
SD	82.7	CV	1.301
k hat (MLE)	0.235	k star (bias corrected MLE)	0.235
Theta hat (MLE)	270.3	Theta star (bias corrected MLE)	270.5
nu hat (MLE)	170.2	nu star (bias corrected)	170.1
MLE Mean (bias corrected)	63.55	MLE Sd (bias corrected)	131.1
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (170.11, α)	141	Adjusted Chi Square Value (170.11, β)	140.8
95% Gamma Approximate UCL (use when n>=50)	76.69	95% Gamma Adjusted UCL (use when n<50)	76.75
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.172	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	74.98	Mean in Log Scale	3.93
SD in Original Scale	74.76	SD in Log Scale	0.888
95% t UCL (assumes normality of ROS data)	81.46	95% Percentile Bootstrap UCL	81.38
95% BCA Bootstrap UCL	81.81	95% Bootstrap t UCL	82.2
95% H-UCL (Log ROS)	83.11		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	147.3	Mean in Log Scale	4.655
SD in Original Scale	119.5	SD in Log Scale	0.841
95% t UCL (Assumes normality)	157.7	95% H-Stat UCL	163.5
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	85.03	95% KM (% Bootstrap) UCL	85.03

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals, dissolved (ug/l)***lead***7439-92-1***ug/l***d)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 18
Number of Detects	17	Number of Non-Detects 345
Number of Distinct Detects	14	Number of Distinct Non-Detects 5
Minimum Detect	0.2	Minimum Non-Detect 0.2
Maximum Detect	15.9	Maximum Non-Detect 10
Variance Detects	13.29	Percent Non-Detects 95.30%
Mean Detects	4.618	SD Detects 3.645
Median Detects	5	CV Detects 0.789
Skewness Detects	1.738	Kurtosis Detects 5.286
Mean of Logged Detects	1.103	SD of Logged Detects 1.172
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.821	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.892	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.216	Lilliefors GOF Test
5% Lilliefors Critical Value	0.215	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.494	Standard Error of Mean 0.082
SD	1.305	95% KM (BCA) UCL 0.639
95% KM (t) UCL	0.63	95% KM (Percentile Bootstrap) UCL 0.631
95% KM (z) UCL	0.629	95% KM Bootstrap t UCL 0.674
90% KM Chebyshev UCL	0.74	95% KM Chebyshev UCL 0.852
97.5% KM Chebyshev UCL	1.006	99% KM Chebyshev UCL 1.31
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.901	Anderson-Darling GOF Test
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.222	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.214	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.314	k star (bias corrected MLE) 1.121
Theta hat (MLE)	3.515	Theta star (bias corrected MLE) 4.119
nu hat (MLE)	44.66	nu star (bias corrected) 38.11
MLE Mean (bias corrected)	4.618	MLE Sd (bias corrected) 4.361
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.144	nu hat (KM) 104
Approximate Chi Square Value (103.96, α)	81.44	Adjusted Chi Square Value (103.96, β) 81.36
95% Gamma Approximate KM-UCL (use when n>=50)	0.631	95% Gamma Adjusted KM-UCL (use when n<50) 0.632
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.358
Maximum	15.9	Median 0.01
SD	1.359	CV 3.8
k hat (MLE)	0.244	k star (bias corrected MLE) 0.244
Theta hat (MLE)	1.468	Theta star (bias corrected MLE) 1.469
nu hat (MLE)	176.5	nu star (bias corrected) 176.3
MLE Mean (bias corrected)	0.358	MLE Sd (bias corrected) 0.725
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (176.34, α)	146.6	Adjusted Chi Square Value (176.34, β) 146.5
95% Gamma Approximate UCL (use when n>=50)	0.43	95% Gamma Adjusted UCL (use when n<50) 0.431
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.829	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.892	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.259	Lilliefors GOF Test
5% Lilliefors Critical Value	0.215	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.415	Mean in Log Scale -2.844
SD in Original Scale	1.3	SD in Log Scale 2.042
95% t UCL (assumes normality of ROS data)	0.527	95% Percentile Bootstrap UCL 0.533
95% BCA Bootstrap UCL	0.564	95% Bootstrap t UCL 0.569
95% H-UCL (Log ROS)	0.658	

DL/2 Statistics			
DL/2 Normal	DL/2 Log-Transformed		
Mean in Original Scale	2.109	Mean in Log Scale	0.347
SD in Original Scale	2.001	SD in Log Scale	0.904
95% t UCL (Assumes normality)	2.282	95% H-Stat UCL	2.347
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (BCA) UCL	0.639		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals, dissolved (ug/l))***magnesium***7439-95-4***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	212
		Number of Missing Observations	0
Minimum	390000	Mean	803497
Maximum	1110000	Median	811500
SD	105320	Std. Error of Mean	5535
Coefficient of Variation	0.131	Skewness	-0.651

Normal GOF Test			
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.114	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	812626	95% Adjusted-CLT UCL (Chen-1995)	812400
		95% Modified-t UCL (Johnson-1978)	812594

Gamma GOF Test			
A-D Test Statistic	8.755	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.136	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	52.55	k star (bias corrected MLE)	52.12
Theta hat (MLE)	15289	Theta star (bias corrected MLE)	15416
nu hat (MLE)	38049	nu star (bias corrected)	37735
MLE Mean (bias corrected)	803497	MLE Sd (bias corrected)	111297
		Approximate Chi Square Value (0.05)	37284
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	37282

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	813211	95% Adjusted Gamma UCL (use when n<50)	813249

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.148	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	12.87	Mean of logged Data	13.59
Maximum of Logged Data	13.92	SD of logged Data	0.143

Assuming Lognormal Distribution			
95% H-UCL	814203	90% Chebyshev (MVUE) UCL	822241
95% Chebyshev (MVUE) UCL	830493	97.5% Chebyshev (MVUE) UCL	841948
99% Chebyshev (MVUE) UCL	864448		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs			
95% CLT UCL	812602	95% Jackknife UCL	812626
95% Standard Bootstrap UCL	812569	95% Bootstrap-t UCL	812577
95% Hall's Bootstrap UCL	812575	95% Percentile Bootstrap UCL	812649
95% BCA Bootstrap UCL	812511		
90% Chebyshev(Mean, Sd) UCL	820104	95% Chebyshev(Mean, Sd) UCL	827626
97.5% Chebyshev(Mean, Sd) UCL	838066	99% Chebyshev(Mean, Sd) UCL	858575
Suggested UCL to Use			
95% Student's-t UCL	812626	or 95% Modified-t UCL	812594

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

RESULT_VALUE_MDL (metals, dissolved (ug/l)***manganese***7439-96-5***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	312
Number of Detects	361	Number of Non-Detects	1
Number of Distinct Detects	311	Number of Distinct Non-Detects	1
Minimum Detect	5.8	Minimum Non-Detect	5
Maximum Detect	311.4	Maximum Non-Detect	5
Variance Detects	1180	Percent Non-Detects	0.28%
Mean Detects	69.88	SD Detects	34.35
Median Detects	68.8	CV Detects	0.492
Skewness Detects	1.422	Kurtosis Detects	7.202
Mean of Logged Detects	4.106	SD of Logged Detects	0.591

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.936	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.0695	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	69.7	Standard Error of Mean	1.812
SD	34.42	95% KM (BCA) UCL	72.92
95% KM (t) UCL	72.69	95% KM (Percentile Bootstrap) UCL	72.68
95% KM (z) UCL	72.68	95% KM Bootstrap t UCL	72.93
90% KM Chebyshev UCL	75.14	95% KM Chebyshev UCL	77.6
97.5% KM Chebyshev UCL	81.02	99% KM Chebyshev UCL	87.73

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.008	Anderson-Darling GOF Test
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0769	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0481	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	3.699	k star (bias corrected MLE)	3.671
Theta hat (MLE)	18.89	Theta star (bias corrected MLE)	19.04
nu hat (MLE)	2671	nu star (bias corrected)	2650
MLE Mean (bias corrected)	69.88	MLE Sd (bias corrected)	36.48

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	4.1	nu hat (KM)	2968
Approximate Chi Square Value (N/A, α)	2843	Adjusted Chi Square Value (N/A, β)	2842
95% Gamma Approximate KM-UCL (use when n>=50)	72.78	95% Gamma Adjusted KM-UCL (use when n<50)	72.8

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	5.8	Mean	69.72
Maximum	311.4	Median	68.5
SD	34.44	CV	0.494
k hat (MLE)	3.641	k star (bias corrected MLE)	3.612
Theta hat (MLE)	19.15	Theta star (bias corrected MLE)	19.3
nu hat (MLE)	2636	nu star (bias corrected)	2615
MLE Mean (bias corrected)	69.72	MLE Sd (bias corrected)	36.68
		Adjusted Level of Significance (β)	0.0493

Approximate Chi Square Value (N/A, α)	2497	Adjusted Chi Square Value (N/A, β)	2497
95% Gamma Approximate UCL (use when $n \geq 50$)	73.01	95% Gamma Adjusted UCL (use when $n < 50$)	73.02
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.112	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	69.72	Mean in Log Scale	4.101
SD in Original Scale	34.44	SD in Log Scale	0.597
95% t UCL (assumes normality of ROS data)	72.71	95% Percentile Bootstrap UCL	72.7
95% BCA Bootstrap UCL	72.89	95% Bootstrap t UCL	72.94
95% H-UCL (Log ROS)	76.47		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	69.7	Mean in Log Scale	4.097
SD in Original Scale	34.49	SD in Log Scale	0.613
95% t UCL (Assumes normality)	72.69	95% H-Stat UCL	77.07
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	72.92		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals, dissolved (ug/l)***mercury***7439-97-6***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	98
Number of Detects	218	Number of Non-Detects	144
Number of Distinct Detects	96	Number of Distinct Non-Detects	3
Minimum Detect	1.60E-04	Minimum Non-Detect	8.00E-05
Maximum Detect	0.00507	Maximum Non-Detect	1.60E-04
Variance Detects	5.42E-07	Percent Non-Detects	39.78%
Mean Detects	6.61E-04	SD Detects	7.36E-04
Median Detects	4.00E-04	CV Detects	1.113
Skewness Detects	3.368	Kurtosis Detects	13.81
Mean of Logged Detects	-7.651	SD of Logged Detects	0.729
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.612	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.249	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.06	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.30E-04	Standard Error of Mean	3.36E-05
SD	6.37E-04	95% KM (BCA) UCL	4.94E-04
95% KM (t) UCL	4.85E-04	95% KM (Percentile Bootstrap) UCL	4.89E-04
95% KM (z) UCL	4.85E-04	95% KM Bootstrap t UCL	4.91E-04
90% KM Chebyshev UCL	5.31E-04	95% KM Chebyshev UCL	5.76E-04
97.5% KM Chebyshev UCL	6.40E-04	99% KM Chebyshev UCL	7.64E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	10.76	Anderson-Darling GOF Test	
5% A-D Critical Value	0.77	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.178	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0626	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.67E+00	k star (bias corrected MLE)	1.65E+00
Theta hat (MLE)	3.97E-04	Theta star (bias corrected MLE)	4.02E-04
nu hat (MLE)	7.26E+02	nu star (bias corrected)	7.17E+02
MLE Mean (bias corrected)	6.61E-04	MLE Sd (bias corrected)	5.16E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.456	nu hat (KM)	330.2
Approximate Chi Square Value (330.22, α)	289.1	Adjusted Chi Square Value (330.22, β)	289
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	4.91E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	4.92E-04

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	1.60E-04	Mean 0.00438
Maximum	1.00E-02	Median 9.60E-04
SD	0.00461	CV 1.054
k hat (MLE)	0.611	k star (bias corrected MLE) 0.608
Theta hat (MLE)	0.00716	Theta star (bias corrected MLE) 0.00719
nu hat (MLE)	442.7	nu star (bias corrected) 440.4
MLE Mean (bias corrected)	4.38E-03	MLE Sd (bias corrected) 5.61E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (440.39, α)	392.7	Adjusted Chi Square Value (440.39, β) 392.6
95% Gamma Approximate UCL (use when n>=50)	0.00491	95% Gamma Adjusted UCL (use when n<50) 0.00491
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.12	Lilliefors GOF Test
5% Lilliefors Critical Value	6.00E-02	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	4.34E-04	Mean in Log Scale -8.371
SD in Original Scale	6.36E-04	SD in Log Scale 1.119
95% t UCL (assumes normality of ROS data)	4.89E-04	95% Percentile Bootstrap UCL 4.90E-04
95% BCA Bootstrap UCL	4.98E-04	95% Bootstrap t UCL 5.02E-04
95% H-UCL (Log ROS)	4.93E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	4.28E-04	Mean in Log Scale -8.389
SD in Original Scale	6.39E-04	SD in Log Scale 1.072
95% t UCL (Assumes normality)	4.83E-04	95% H-Stat UCL 4.57E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	4.94E-04	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (metals, dissolved (ug/l)***nickel***7440-02-0***ug/l****d)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 47
Number of Detects	169	Number of Non-Detects 193
Number of Distinct Detects	44	Number of Distinct Non-Detects 5
Minimum Detect	7.00E-01	Minimum Non-Detect 0.8
Maximum Detect	120	Maximum Non-Detect 8
Variance Detects	96.18	Percent Non-Detects 53.31%
Mean Detects	3.483	SD Detects 9.807
Median Detects	1.7	CV Detects 2.816
Skewness Detects	10.3	Kurtosis Detects 120.2
Mean of Logged Detects	0.686	SD of Logged Detects 0.762
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.248	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.388	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0682	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2.177	Standard Error of Mean 0.36
SD	6.806	95% KM (BCA) UCL 2.901
95% KM (t) UCL	2.77	95% KM (Percentile Bootstrap) UCL 2.813
95% KM (z) UCL	2.768	95% KM Bootstrap t UCL 3.599
90% KM Chebyshev UCL	3.256	95% KM Chebyshev UCL 3.744
97.5% KM Chebyshev UCL	4.422	99% KM Chebyshev UCL 5.755
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	23.09	Anderson-Darling GOF Test
5% A-D Critical Value	0.783	Detected Data Not Gamma Distributed at 5% Significance Level

K-S Test Statistic	0.313	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0737	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.024	k star (bias corrected MLE)	1.009
Theta hat (MLE)	3.402	Theta star (bias corrected MLE)	3.45
nu hat (MLE)	346	nu star (bias corrected)	341.2
MLE Mean (bias corrected)	3.483	MLE Sd (bias corrected)	3.466
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.102	nu hat (KM)	74.06
Approximate Chi Square Value (74.06, α)	55.25	Adjusted Chi Square Value (74.06, β)	55.18
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.919	95% Gamma Adjusted KM-UCL (use when $n < 50$)	2.922
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	2.019
Maximum	120	Median	1.095
SD	6.97	CV	3.452
k hat (MLE)	0.305	k star (bias corrected MLE)	0.304
Theta hat (MLE)	6.63	Theta star (bias corrected MLE)	6.645
nu hat (MLE)	220.5	nu star (bias corrected)	220
MLE Mean (bias corrected)	2.019	MLE Sd (bias corrected)	3.663
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (220.02, α)	186.7	Adjusted Chi Square Value (220.02, β)	186.6
95% Gamma Approximate UCL (use when $n \geq 50$)	2.38	95% Gamma Adjusted UCL (use when $n < 50$)	2.381
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.206	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0682	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.115	Mean in Log Scale	0.0843
SD in Original Scale	6.843	SD in Log Scale	0.975
95% t UCL (assumes normality of ROS data)	2.708	95% Percentile Bootstrap UCL	2.714
95% BCA Bootstrap UCL	3.141	95% Bootstrap t UCL	3.563
95% H-UCL (Log ROS)	1.949		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.488	Mean in Log Scale	0.387
SD in Original Scale	6.809	SD in Log Scale	0.883
95% t UCL (Assumes normality)	3.078	95% H-Stat UCL	2.39
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	2.77	95% KM (% Bootstrap) UCL	2.813
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals, dissolved (ug/l)***potassium*** 7440-09-7***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	133
		Number of Missing Observations	0
Minimum	136000	Mean	246243
Maximum	471000	Median	240000
SD	48167	Std. Error of Mean	2532
Coefficient of Variation	0.196	Skewness	1.791
Normal GOF Test			
Shapiro Wilk Test Statistic	0.853	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.132	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	250418	95% Adjusted-CLT UCL (Chen-1995)	250662
		95% Modified-t UCL (Johnson-1978)	250458
Gamma GOF Test			
A-D Test Statistic	7.662	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.104	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	29.95	k star (bias corrected MLE)	29.7
Theta hat (MLE)	8223	Theta star (bias corrected MLE)	8291
nu hat (MLE)	21681	nu star (bias corrected)	21503
MLE Mean (bias corrected)	246243	MLE Sd (bias corrected)	45184
		Approximate Chi Square Value (0.05)	21163
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	21161
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	250199	95% Adjusted Gamma UCL (use when n<50)	250215
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.933	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0914	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	11.82	Mean of logged Data	12.4
Maximum of Logged Data	13.06	SD of logged Data	0.18
Assuming Lognormal Distribution			
95% H-UCL	250005	90% Chebyshev (MVUE) UCL	253084
95% Chebyshev (MVUE) UCL	256264	97.5% Chebyshev (MVUE) UCL	260677
99% Chebyshev (MVUE) UCL	269346		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	250407	95% Jackknife UCL	250418
95% Standard Bootstrap UCL	250387	95% Bootstrap-t UCL	250613
95% Hall's Bootstrap UCL	250704	95% Percentile Bootstrap UCL	250599
95% BCA Bootstrap UCL	250119		
90% Chebyshev(Mean, Sd) UCL	253838	95% Chebyshev(Mean, Sd) UCL	257278
97.5% Chebyshev(Mean, Sd) UCL	262053	99% Chebyshev(Mean, Sd) UCL	271432
Suggested UCL to Use			
95% Student's-t UCL	250418	or 95% Modified-t UCL	250458
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals, dissolved (ug/l)***selenium***7782-49-2***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	36
Number of Detects	28	Number of Non-Detects	334
Number of Distinct Detects	28	Number of Distinct Non-Detects	8
Minimum Detect	0.582	Minimum Non-Detect	0.484
Maximum Detect	2.53	Maximum Non-Detect	6
Variance Detects	0.327	Percent Non-Detects	92.27%
Mean Detects	1.235	SD Detects	0.572
Median Detects	1.22	CV Detects	0.463
Skewness Detects	0.657	Kurtosis Detects	-0.658
Mean of Logged Detects	0.108	SD of Logged Detects	0.461
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.901	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.643	Standard Error of Mean	0.0289
SD	0.277	95% KM (BCA) UCL	0.729
95% KM (t) UCL	0.69	95% KM (Percentile Bootstrap) UCL	0.719
95% KM (z) UCL	0.69	95% KM Bootstrap t UCL	0.692
90% KM Chebyshev UCL	0.729	95% KM Chebyshev UCL	0.769
97.5% KM Chebyshev UCL	0.823	99% KM Chebyshev UCL	0.93
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.775	Anderson-Darling GOF Test	
5% A-D Critical Value	0.749	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.17	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.166	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.042	k star (bias corrected MLE)	4.525
Theta hat (MLE)	0.245	Theta star (bias corrected MLE)	0.273
nu hat (MLE)	282.3	nu star (bias corrected)	253.4
MLE Mean (bias corrected)	1.235	MLE Sd (bias corrected)	0.58
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	5.379	nu hat (KM)	3895
Approximate Chi Square Value (N/A, α)	3751	Adjusted Chi Square Value (N/A, β)	3750
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.667	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.668
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.437
Maximum	2.53	Median	0.327
SD	0.441	CV	1.01
k hat (MLE)	0.654	k star (bias corrected MLE)	0.65
Theta hat (MLE)	0.668	Theta star (bias corrected MLE)	0.672
nu hat (MLE)	473.3	nu star (bias corrected)	470.8
MLE Mean (bias corrected)	0.437	MLE Sd (bias corrected)	0.542
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (470.75, α)	421.4	Adjusted Chi Square Value (470.75, β)	421.3
95% Gamma Approximate UCL (use when $n \geq 50$)	0.488	95% Gamma Adjusted UCL (use when $n < 50$)	0.488
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.164	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.568	Mean in Log Scale	-0.721
SD in Original Scale	0.347	SD in Log Scale	0.555
95% t UCL (assumes normality of ROS data)	0.598	95% Percentile Bootstrap UCL	0.598
95% BCA Bootstrap UCL	0.6	95% Bootstrap t UCL	0.601
95% H-UCL (Log ROS)	0.598		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.5	95% H-UCL (KM -Log)	0.654
KM SD (logged)	0.308	95% Critical H Value (KM-Log)	1.714
KM Standard Error of Mean (logged)	0.0416		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.748	Mean in Log Scale	-0.421
SD in Original Scale	0.539	SD in Log Scale	0.439
95% t UCL (Assumes normality)	0.795	95% H-Stat UCL	0.753
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.69	95% KM (Percentile Bootstrap) UCL	0.719

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals, dissolved (ug/l))***silicon***7440-21-3***ug/l***d)

General Statistics			
Total Number of Observations	27	Number of Distinct Observations	25
		Number of Missing Observations	0
Minimum	655	Mean	1377
Maximum	5250	Median	1160
SD	854.6	Std. Error of Mean	164.5
Coefficient of Variation	0.62	Skewness	3.835
Normal GOF Test			
Shapiro Wilk Test Statistic	0.575	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.262	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1658	95% Adjusted-CLT UCL (Chen-1995)	1778
		95% Modified-t UCL (Johnson-1978)	1678
Gamma GOF Test			
A-D Test Statistic	1.584	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.747	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.194	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.169	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	5.191	k star (bias corrected MLE)	4.639
Theta hat (MLE)	265.4	Theta star (bias corrected MLE)	296.9
nu hat (MLE)	280.3	nu star (bias corrected)	250.5
MLE Mean (bias corrected)	1377	MLE Sd (bias corrected)	639.5
		Approximate Chi Square Value (0.05)	214.8
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	212.7
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1606	95% Adjusted Gamma UCL (use when n<50)	1622
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.865	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.155	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.485	Mean of logged Data	7.129
Maximum of Logged Data	8.566	SD of logged Data	0.401
Assuming Lognormal Distribution			
95% H-UCL	1568	90% Chebyshev (MVUE) UCL	1668
95% Chebyshev (MVUE) UCL	1813	97.5% Chebyshev (MVUE) UCL	2015
99% Chebyshev (MVUE) UCL	2411		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1648	95% Jackknife UCL	1658
95% Standard Bootstrap UCL	1645	95% Bootstrap-t UCL	1977
95% Hall's Bootstrap UCL	2733	95% Percentile Bootstrap UCL	1669
95% BCA Bootstrap UCL	1839		
90% Chebyshev(Mean, Sd) UCL	1871	95% Chebyshev(Mean, Sd) UCL	2094
97.5% Chebyshev(Mean, Sd) UCL	2404	99% Chebyshev(Mean, Sd) UCL	3014
Suggested UCL to Use			
95% Student's-t UCL	1658	or 95% Modified-t UCL	1678

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals, dissolved (ug/l))***sodium***7440-23-5***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	177
		Number of Missing Observations	0
Minimum	3200000	Mean	6677431
Maximum	9360000	Median	6790000
SD	746406	Std. Error of Mean	39230
Coefficient of Variation	0.112	Skewness	-1.174
Normal GOF Test			
Shapiro Wilk Test Statistic	0.897	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	6742125	95% Adjusted-CLT UCL (Chen-1995)	6739372
		95% Modified-t UCL (Johnson-1978)	6741721
Gamma GOF Test			
A-D Test Statistic	12.99	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.149	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	69.38	k star (bias corrected MLE)	68.81
Theta hat (MLE)	96238	Theta star (bias corrected MLE)	97039
nu hat (MLE)	50235	nu star (bias corrected)	49820
MLE Mean (bias corrected)	6677431	MLE Sd (bias corrected)	804968
		Approximate Chi Square Value (0.05)	49302
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	49299
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	6747599	95% Adjusted Gamma UCL (use when n<50)	6747876
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.815	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.161	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	14.98	Mean of logged Data	15.71
Maximum of Logged Data	16.05	SD of logged Data	0.126
Assuming Lognormal Distribution			
95% H-UCL	6756174	90% Chebyshev (MVUE) UCL	6815052
95% Chebyshev (MVUE) UCL	6875348	97.5% Chebyshev (MVUE) UCL	6959038
99% Chebyshev (MVUE) UCL	7123429		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	6741959	95% Jackknife UCL	6742125
95% Standard Bootstrap UCL	6741162	95% Bootstrap-t UCL	6739967
95% Hall's Bootstrap UCL	6743197	95% Percentile Bootstrap UCL	6743370
95% BCA Bootstrap UCL	6745304		
90% Chebyshev(Mean, Sd) UCL	6795122	95% Chebyshev(Mean, Sd) UCL	6848431
97.5% Chebyshev(Mean, Sd) UCL	6922424	99% Chebyshev(Mean, Sd) UCL	7067767
Suggested UCL to Use			
95% Student's-t UCL	6742125	or 95% Modified-t UCL	6741721

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

RESULT_VALUE_MDL (metals, dissolved (ug/l))***thallium***7440-28-0***ug/l***d)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	12
Number of Detects	8	Number of Non-Detects	354
Number of Distinct Detects	8	Number of Distinct Non-Detects	5
Minimum Detect	0.3	Minimum Non-Detect	0.03
Maximum Detect	55.7	Maximum Non-Detect	8
Variance Detects	378.3	Percent Non-Detects	97.79%
Mean Detects	14.15	SD Detects	19.45
Median Detects	5.25	CV Detects	1.374
Skewness Detects	1.72	Kurtosis Detects	2.625
Mean of Logged Detects	1.478	SD of Logged Detects	1.912
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.769	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.344	Standard Error of Mean	0.192
SD	3.41	95% KM (BCA) UCL	0.666
95% KM (t) UCL	0.66	95% KM (Percentile Bootstrap) UCL	0.663
95% KM (z) UCL	0.66	95% KM Bootstrap t UCL	1.269
90% KM Chebyshev UCL	0.919	95% KM Chebyshev UCL	1.18
97.5% KM Chebyshev UCL	1.541	99% KM Chebyshev UCL	2.251
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.219	Anderson-Darling GOF Test	
5% A-D Critical Value	0.76	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.147	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.308	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.536	k star (bias corrected MLE)	0.419
Theta hat (MLE)	26.38	Theta star (bias corrected MLE)	33.81
nu hat (MLE)	8.581	nu star (bias corrected)	6.697
MLE Mean (bias corrected)	14.15	MLE Sd (bias corrected)	21.87
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0102	nu hat (KM)	7.385
Approximate Chi Square Value (7.39, α)	2.384	Adjusted Chi Square Value (7.39, β)	2.373
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.067	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1.072
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.322
Maximum	55.7	Median	0.01
SD	3.416	CV	10.59
k hat (MLE)	0.218	k star (bias corrected MLE)	0.218
Theta hat (MLE)	1.483	Theta star (bias corrected MLE)	1.482
nu hat (MLE)	157.5	nu star (bias corrected)	157.5
MLE Mean (bias corrected)	0.322	MLE Sd (bias corrected)	0.691
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (157.51, α)	129.5	Adjusted Chi Square Value (157.51, β)	129.4
95% Gamma Approximate UCL (use when $n \geq 50$)	0.392	95% Gamma Adjusted UCL (use when $n < 50$)	0.393
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.948	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.145	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.317	Mean in Log Scale	-12.97
SD in Original Scale	3.416	SD in Log Scale	5.962
95% t UCL (assumes normality of ROS data)	0.613	95% Percentile Bootstrap UCL	0.651
95% BCA Bootstrap UCL	0.769	95% Bootstrap t UCL	1.799
95% H-UCL (Log ROS)	1494		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-3.388	95% H-UCL (KM -Log)	0.0503
KM SD (logged)	0.794	95% Critical H Value (KM-Log)	1.971
KM Standard Error of Mean (logged)	0.0458		

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.812 Mean in Log Scale	-1.309
SD in Original Scale	3.467 SD in Log Scale	1.208
95% t UCL (Assumes normality)	1.113 95% H-Stat UCL	0.648
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	0.66 95% KM (Percentile Bootstrap) UCL	0.663

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (metals, dissolved (ug/l)***tin***7440-31-5***ug/l***d)

General Statistics		
Total Number of Observations	362 Number of Distinct Observations	15
Number of Detects	10 Number of Non-Detects	352
Number of Distinct Detects	10 Number of Distinct Non-Detects	5
Minimum Detect	1.3 Minimum Non-Detect	0.6
Maximum Detect	17 Maximum Non-Detect	20
Variance Detects	29.31 Percent Non-Detects	97.24%
Mean Detects	5.85 SD Detects	5.414
Median Detects	3.4 CV Detects	0.925
Skewness Detects	1.29 Kurtosis Detects	0.586
Mean of Logged Detects	1.398 SD of Logged Detects	0.897

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.817 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.261 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28 Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.758 Standard Error of Mean	0.0706
SD	1.242 95% KM (BCA) UCL	0.898
95% KM (t) UCL	0.875 95% KM (Percentile Bootstrap) UCL	0.873
95% KM (z) UCL	0.874 95% KM Bootstrap t UCL	0.961
90% KM Chebyshev UCL	0.97 95% KM Chebyshev UCL	1.066
97.5% KM Chebyshev UCL	1.199 99% KM Chebyshev UCL	1.461

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.444 Anderson-Darling GOF Test	
5% A-D Critical Value	0.739 Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.205 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.271 Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.503 k star (bias corrected MLE)	1.119
Theta hat (MLE)	3.892 Theta star (bias corrected MLE)	5.229
nu hat (MLE)	30.06 nu star (bias corrected)	22.37
MLE Mean (bias corrected)	5.85 MLE Sd (bias corrected)	5.531

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.373 nu hat (KM)	269.7
Approximate Chi Square Value (269.74, α)	232.7 Adjusted Chi Square Value (269.74, β)	232.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.879 95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.879

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	0.173
Maximum	17 Median	0.01
SD	1.284 CV	7.437
k hat (MLE)	0.264 k star (bias corrected MLE)	0.263
Theta hat (MLE)	0.655 Theta star (bias corrected MLE)	0.656
nu hat (MLE)	190.8 nu star (bias corrected)	190.6
MLE Mean (bias corrected)	0.173 MLE Sd (bias corrected)	0.337
	Adjusted Level of Significance (β)	0.0493

Approximate Chi Square Value (190.56, α)	159.6	Adjusted Chi Square Value (190.56, β)	159.5
95% Gamma Approximate UCL (use when $n \geq 50$)	0.206	95% Gamma Adjusted UCL (use when $n < 50$)	0.206
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.152	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.235	Mean in Log Scale	-4.553
SD in Original Scale	1.289	SD in Log Scale	2.562
95% t UCL (assumes normality of ROS data)	0.346	95% Percentile Bootstrap UCL	0.353
95% BCA Bootstrap UCL	0.391	95% Bootstrap t UCL	0.437
95% H-UCL (Log ROS)	0.463		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.45	95% H-UCL (KM -Log)	0.703
KM SD (logged)	0.359	95% Critical H Value (KM-Log)	1.733
KM Standard Error of Mean (logged)	0.021		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.27	Mean in Log Scale	-0.491
SD in Original Scale	2.304	SD in Log Scale	1.022
95% t UCL (Assumes normality)	1.47	95% H-Stat UCL	1.158
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.875	95% KM (Percentile Bootstrap) UCL	0.873
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals, dissolved (ug/l)***vanadium***7440-62-2***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	37
Number of Detects	133	Number of Non-Detects	229
Number of Distinct Detects	37	Number of Distinct Non-Detects	4
Minimum Detect	0.7	Minimum Non-Detect	1
Maximum Detect	13.8	Maximum Non-Detect	5
Variance Detects	7.308	Percent Non-Detects	63.26%
Mean Detects	2.635	SD Detects	2.703
Median Detects	1.7	CV Detects	1.026
Skewness Detects	2.684	Kurtosis Detects	6.638
Mean of Logged Detects	0.69	SD of Logged Detects	0.65
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.58	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.355	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0768	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.622	Standard Error of Mean	0.099
SD	1.828	95% KM (BCA) UCL	1.8
95% KM (t) UCL	1.785	95% KM (Percentile Bootstrap) UCL	1.788
95% KM (z) UCL	1.785	95% KM Bootstrap t UCL	1.81
90% KM Chebyshev UCL	1.919	95% KM Chebyshev UCL	2.053
97.5% KM Chebyshev UCL	2.24	99% KM Chebyshev UCL	2.607
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.98	Anderson-Darling GOF Test	
5% A-D Critical Value	0.766	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.261	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0821	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.945	k star (bias corrected MLE)	1.907
Theta hat (MLE)	1.354	Theta star (bias corrected MLE)	1.382

nu hat (MLE)	517.5	nu star (bias corrected)	507.2
MLE Mean (bias corrected)	2.635	MLE Sd (bias corrected)	1.908
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.788	nu hat (KM)	570.3
Approximate Chi Square Value (570.26, α)	515.9	Adjusted Chi Square Value (570.26, β)	515.7
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.793	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1.794
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.2
Maximum	13.8	Median	0.438
SD	2.08	CV	1.733
k hat (MLE)	0.33	k star (bias corrected MLE)	0.329
Theta hat (MLE)	3.634	Theta star (bias corrected MLE)	3.644
nu hat (MLE)	239.1	nu star (bias corrected)	238.4
MLE Mean (bias corrected)	1.2	MLE Sd (bias corrected)	2.091
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (238.43, α)	203.7	Adjusted Chi Square Value (238.43, β)	203.6
95% Gamma Approximate UCL (use when $n \geq 50$)	1.405	95% Gamma Adjusted UCL (use when $n < 50$)	1.406
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.191	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0768	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.488	Mean in Log Scale	-0.00295
SD in Original Scale	1.911	SD in Log Scale	0.837
95% t UCL (assumes normality of ROS data)	1.653	95% Percentile Bootstrap UCL	1.66
95% BCA Bootstrap UCL	1.703	95% Bootstrap t UCL	1.691
95% H-UCL (Log ROS)	1.546		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.755	Mean in Log Scale	0.246
SD in Original Scale	1.899	SD in Log Scale	0.739
95% t UCL (Assumes normality)	1.92	95% H-Stat UCL	1.811
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.785	95% KM (% Bootstrap) UCL	1.788
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (metals, dissolved (ug/l)***zinc***7440-66-6***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	36
Number of Detects	38	Number of Non-Detects	324
Number of Distinct Detects	33	Number of Distinct Non-Detects	5
Minimum Detect	8	Minimum Non-Detect	7
Maximum Detect	60.6	Maximum Non-Detect	60
Variance Detects	69.77	Percent Non-Detects	89.50%
Mean Detects	15.56	SD Detects	8.353
Median Detects	14.65	CV Detects	0.537
Skewness Detects	4.42	Kurtosis Detects	23.76
Mean of Logged Detects	2.669	SD of Logged Detects	0.353
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.572	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.224	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.976	Standard Error of Mean	0.443
SD	3.776	95% KM (BCA) UCL	10.69
95% KM (t) UCL	10.71	95% KM (Percentile Bootstrap) UCL	10.71

95% KM (z) UCL	10.7	95% KM Bootstrap t UCL	10.78
90% KM Chebyshev UCL	11.31	95% KM Chebyshev UCL	11.91
97.5% KM Chebyshev UCL	12.74	99% KM Chebyshev UCL	14.39
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.528	Anderson-Darling GOF Test	
5% A-D Critical Value	0.75	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.15	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.143	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.763	k star (bias corrected MLE)	6.246
Theta hat (MLE)	2.3	Theta star (bias corrected MLE)	2.49
nu hat (MLE)	514	nu star (bias corrected)	474.7
MLE Mean (bias corrected)	15.56	MLE Sd (bias corrected)	6.224
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	6.979	nu hat (KM)	5053
Approximate Chi Square Value (N/A, α)	4889	Adjusted Chi Square Value (N/A, β)	4888
95% Gamma Approximate KM-UCL (use when n>=50)	10.31	95% Gamma Adjusted KM-UCL (use when n<50)	10.31
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	6.531
Maximum	60.6	Median	5.688
SD	5.912	CV	0.905
k hat (MLE)	0.588	k star (bias corrected MLE)	0.585
Theta hat (MLE)	11.1	Theta star (bias corrected MLE)	11.16
nu hat (MLE)	426	nu star (bias corrected)	423.8
MLE Mean (bias corrected)	6.531	MLE Sd (bias corrected)	8.537
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (423.77, α)	377.1	Adjusted Chi Square Value (423.77, β)	376.9
95% Gamma Approximate UCL (use when n>=50)	7.341	95% Gamma Adjusted UCL (use when n<50)	7.344
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.118	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	9.193	Mean in Log Scale	2.14
SD in Original Scale	4.361	SD in Log Scale	0.385
95% t UCL (assumes normality of ROS data)	9.571	95% Percentile Bootstrap UCL	9.591
95% BCA Bootstrap UCL	9.672	95% Bootstrap t UCL	9.637
95% H-UCL (Log ROS)	9.481		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	2.26	95% H-UCL (KM -Log)	10.15
KM SD (logged)	0.26	95% Critical H Value (KM-Log)	1.699
KM Standard Error of Mean (logged)	0.0464		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	13.04	Mean in Log Scale	2.288
SD in Original Scale	10.6	SD in Log Scale	0.709
95% t UCL (Assumes normality)	13.96	95% H-Stat UCL	13.61
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	10.71	95% KM (% Bootstrap) UCL	10.71
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (organometallic compounds (ug/l)***methyl mercury***22967-92-6***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	138

Number of Detects	266	Number of Non-Detects	96
Number of Distinct Detects	134	Number of Distinct Non-Detects	12
Minimum Detect	2.00E-05	Minimum Non-Detect	1.90E-05
Maximum Detect	0.00237	Maximum Non-Detect	1.14E-04
Variance Detects	3.17E-08	Percent Non-Detects	26.52%
Mean Detects	1.06E-04	SD Detects	1.78E-04
Median Detects	6.45E-05	CV Detects	1.682
Skewness Detects	8.685	Kurtosis Detects	101
Mean of Logged Detects	-9.563	SD of Logged Detects	0.78
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.413	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.315	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0543	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	8.48E-05	Standard Error of Mean	8.25E-06
SD	1.57E-04	95% KM (BCA) UCL	1.01E-04
95% KM (t) UCL	9.84E-05	95% KM (Percentile Bootstrap) UCL	9.95E-05
95% KM (z) UCL	9.83E-05	95% KM Bootstrap t UCL	1.05E-04
90% KM Chebyshev UCL	1.10E-04	95% KM Chebyshev UCL	1.21E-04
97.5% KM Chebyshev UCL	1.36E-04	99% KM Chebyshev UCL	1.67E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.82	Anderson-Darling GOF Test	
5% A-D Critical Value	0.775	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.142	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0572	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.36E+00	k star (bias corrected MLE)	1.35E+00
Theta hat (MLE)	7.77E-05	Theta star (bias corrected MLE)	7.84E-05
nu hat (MLE)	7.25E+02	nu star (bias corrected)	7.18E+02
MLE Mean (bias corrected)	1.06E-04	MLE Sd (bias corrected)	9.11E-05
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.293	nu hat (KM)	212.1
Approximate Chi Square Value (212.11, α)	179.4	Adjusted Chi Square Value (212.11, β)	179.3
95% Gamma Approximate KM-UCL (use when n>=50)	1.00E-04	95% Gamma Adjusted KM-UCL (use when n<50)	1.00E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.00E-05	Mean	0.00273
Maximum	1.00E-02	Median	9.15E-05
SD	0.00438	CV	1.603
k hat (MLE)	0.295	k star (bias corrected MLE)	0.294
Theta hat (MLE)	0.00926	Theta star (bias corrected MLE)	0.00928
nu hat (MLE)	213.5	nu star (bias corrected)	213.1
MLE Mean (bias corrected)	2.73E-03	MLE Sd (bias corrected)	5.03E-03
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (213.08, α)	180.3	Adjusted Chi Square Value (213.08, β)	180.2
95% Gamma Approximate UCL (use when n>=50)	0.00323	95% Gamma Adjusted UCL (use when n<50)	0.00323
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0745	Lilliefors GOF Test	
5% Lilliefors Critical Value	5.43E-02	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	8.33E-05	Mean in Log Scale	-9.947
SD in Original Scale	1.57E-04	SD in Log Scale	0.986
95% t UCL (assumes normality of ROS data)	9.70E-05	95% Percentile Bootstrap UCL	9.74E-05
95% BCA Bootstrap UCL	1.02E-04	95% Bootstrap t UCL	1.05E-04
95% H-UCL (Log ROS)	8.69E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8.36E-05	Mean in Log Scale	-9.954
SD in Original Scale	1.57E-04	SD in Log Scale	1.007
95% t UCL (Assumes normality)	9.72E-05	95% H-Stat UCL	8.84E-05
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL1.01E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pcb aroclors (ug/l)***aroclor 1242***53469-21-9***ug/l***t)

General Statistics		
Total Number of Observations	335	Number of Distinct Observations19
Number of Detects	14	Number of Non-Detects321
Number of Distinct Detects	12	Number of Distinct Non-Detects9
Minimum Detect	5.30E-03	Minimum Non-Detect0.0018
Maximum Detect	0.029	Maximum Non-Detect0.018
Variance Detects	4.84E-05	Percent Non-Detects95.82%
Mean Detects	0.0162	SD Detects0.00695
Median Detects	0.015	CV Detects0.428
Skewness Detects	0.368	Kurtosis Detects-0.639
Mean of Logged Detects	-4.215	SD of Logged Detects0.472

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.967	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.874	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.142	Lilliefors GOF Test
5% Lilliefors Critical Value	0.237	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00242	Standard Error of Mean1.84E-04
SD	0.00322	95% KM (BCA) UCL0.00267
95% KM (t) UCL	0.00272	95% KM (Percentile Bootstrap) UCL0.00273
95% KM (z) UCL	0.00272	95% KM Bootstrap t UCL0.0028
90% KM Chebyshev UCL	0.00297	95% KM Chebyshev UCL0.00322
97.5% KM Chebyshev UCL	0.00356	99% KM Chebyshev UCL0.00425

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.172	Anderson-Darling GOF Test
5% A-D Critical Value	0.738	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.128	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.229	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	5.419	k star (bias corrected MLE)4.305
Theta hat (MLE)	0.003	Theta star (bias corrected MLE)0.00377
nu hat (MLE)	151.7	nu star (bias corrected)120.6
MLE Mean (bias corrected)	0.0162	MLE Sd (bias corrected)0.00783

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.564	nu hat (KM)377.8
Approximate Chi Square Value (377.76, α)	333.7	Adjusted Chi Square Value (377.76, β)333.5
95% Gamma Approximate KM-UCL (use when n>=50)	0.00274	95% Gamma Adjusted KM-UCL (use when n<50)0.00274

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0053	Mean0.0103
Maximum	0.029	Median0.01
SD	0.00186	CV0.181
k hat (MLE)	53.03	k star (bias corrected MLE)52.56
Theta hat (MLE)	1.93E-04	Theta star (bias corrected MLE)1.95E-04
nu hat (MLE)	35532	nu star (bias corrected)35215
MLE Mean (bias corrected)	0.0103	MLE Sd (bias corrected)0.00142
		Adjusted Level of Significance (β)0.0493
Approximate Chi Square Value (N/A, α)	34780	Adjusted Chi Square Value (N/A, β)34778
95% Gamma Approximate UCL (use when n>=50)	0.0104	95% Gamma Adjusted UCL (use when n<50)0.0104

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.965	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.874	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.156	Lilliefors GOF Test
5% Lilliefors Critical Value	0.237	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00205	Mean in Log Scale	-7.01
SD in Original Scale	0.00362	SD in Log Scale	1.28
95% t UCL (assumes normality of ROS data)	0.00238	95% Percentile Bootstrap UCL	0.00241
95% BCA Bootstrap UCL	0.00244	95% Bootstrap t UCL	0.00245
95% H-UCL (Log ROS)	0.00242		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-6.23	95% H-UCL (KM -Log)	0.00226
KM SD (logged)	0.436	95% Critical H Value (KM-Log)	1.763
KM Standard Error of Mean (logged)	0.025		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00199	Mean in Log Scale	-6.744
SD in Original Scale	0.0037	SD in Log Scale	0.751
95% t UCL (Assumes normality)	0.00233	95% H-Stat UCL	0.00169
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00272	95% KM (Percentile Bootstrap) UCL	0.00273
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (pcb aroclors (ug/l)***aroclor 1254***11097-69-1***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	36
Number of Detects	36	Number of Non-Detects	299
Number of Distinct Detects	30	Number of Distinct Non-Detects	7
Minimum Detect	0.0046	Minimum Non-Detect	0.0022
Maximum Detect	0.072	Maximum Non-Detect	0.022
Variance Detects	2.03E-04	Percent Non-Detects	89.25%
Mean Detects	0.0192	SD Detects	0.0142
Median Detects	0.0175	CV Detects	0.74
Skewness Detects	1.562	Kurtosis Detects	3.915
Mean of Logged Detects	-4.211	SD of Logged Detects	0.75
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.852	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.935	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.153	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.148	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00406	Standard Error of Mean	3.90E-04
SD	0.00701	95% KM (BCA) UCL	0.00475
95% KM (t) UCL	0.0047	95% KM (Percentile Bootstrap) UCL	0.00473
95% KM (z) UCL	0.0047	95% KM Bootstrap t UCL	0.0049
90% KM Chebyshev UCL	0.00523	95% KM Chebyshev UCL	0.00576
97.5% KM Chebyshev UCL	0.00649	99% KM Chebyshev UCL	0.00794
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.929	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.159	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.149	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.069	k star (bias corrected MLE)	1.915
Theta hat (MLE)	0.0093	Theta star (bias corrected MLE)	0.01
nu hat (MLE)	149	nu star (bias corrected)	137.9
MLE Mean (bias corrected)	0.0192	MLE Sd (bias corrected)	0.0139
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.335	nu hat (KM)	224.5
Approximate Chi Square Value (224.47, α)	190.8	Adjusted Chi Square Value (224.47, β)	190.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.00478	95% Gamma Adjusted KM-UCL (use when n<50)	0.00478
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0046	Mean 0.011
Maximum	0.072	Median 0.01
SD	0.00543	CV 0.494
k hat (MLE)	9.711	k star (bias corrected MLE) 9.626
Theta hat (MLE)	0.00113	Theta star (bias corrected MLE) 0.00114
nu hat (MLE)	6506	nu star (bias corrected) 6449
MLE Mean (bias corrected)	0.011	MLE Sd (bias corrected) 0.00354
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	6264	Adjusted Chi Square Value (N/A, β) 6263
95% Gamma Approximate UCL (use when n>=50)	0.0113	95% Gamma Adjusted UCL (use when n<50) 0.0113
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.922	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.935	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.161	Lilliefors GOF Test
5% Lilliefors Critical Value	0.148	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00304	Mean in Log Scale -7.26
SD in Original Scale	0.00738	SD in Log Scale 1.742
95% t UCL (assumes normality of ROS data)	0.00371	95% Percentile Bootstrap UCL 0.0037
95% BCA Bootstrap UCL	0.00386	95% Bootstrap t UCL 0.00381
95% H-UCL (Log ROS)	0.0042	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00361	Mean in Log Scale -6.38
SD in Original Scale	0.00742	SD in Log Scale 0.95
95% t UCL (Assumes normality)	0.00428	95% H-Stat UCL 0.00297
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.0047	95% KM (% Bootstrap) UCL 0.00473
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (pcb aroclors (ug/l)***aroclor 1260***11096-82-5***ug/l***t)		
General Statistics		
Total Number of Observations	335	Number of Distinct Observations 13
Number of Detects	7	Number of Non-Detects 328
Number of Distinct Detects	6	Number of Distinct Non-Detects 7
Minimum Detect	0.018	Minimum Non-Detect 0.0013
Maximum Detect	0.19	Maximum Non-Detect 0.013
Variance Detects	0.00353	Percent Non-Detects 97.91%
Mean Detects	0.0746	SD Detects 0.0594
Median Detects	0.059	CV Detects 0.797
Skewness Detects	1.353	Kurtosis Detects 1.897
Mean of Logged Detects	-2.87	SD of Logged Detects 0.816
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.869	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.223	Lilliefors GOF Test
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00283	Standard Error of Mean 7.76E-04
SD	0.0132	95% KM (BCA) UCL 0.00418
95% KM (t) UCL	0.00411	95% KM (Percentile Bootstrap) UCL 0.00411
95% KM (z) UCL	0.00411	95% KM Bootstrap t UCL 0.00475
90% KM Chebyshev UCL	0.00516	95% KM Chebyshev UCL 0.00622
97.5% KM Chebyshev UCL	0.00768	99% KM Chebyshev UCL 0.0106
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.235	Anderson-Darling GOF Test
5% A-D Critical Value	0.715	Detected data appear Gamma Distributed at 5% Significance Level

K-S Test Statistic	0.165	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.315	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.977	k star (bias corrected MLE)	1.225
Theta hat (MLE)	0.0377	Theta star (bias corrected MLE)	0.0609
nu hat (MLE)	27.67	nu star (bias corrected)	17.15
MLE Mean (bias corrected)	0.0746	MLE Sd (bias corrected)	0.0674
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0463	nu hat (KM)	31.03
Approximate Chi Square Value (31.03, α)	19.3	Adjusted Chi Square Value (31.03, β)	19.26
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00455	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00456
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0113
Maximum	0.19	Median	0.01
SD	0.0122	CV	1.075
k hat (MLE)	5.698	k star (bias corrected MLE)	5.649
Theta hat (MLE)	0.00199	Theta star (bias corrected MLE)	0.00201
nu hat (MLE)	3818	nu star (bias corrected)	3785
MLE Mean (bias corrected)	0.0113	MLE Sd (bias corrected)	0.00478
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3643	Adjusted Chi Square Value (N/A, β)	3642
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0118	95% Gamma Adjusted UCL (use when $n < 50$)	0.0118
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.973	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.165	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00208	Mean in Log Scale	-10.38
SD in Original Scale	0.0134	SD in Log Scale	3.068
95% t UCL (assumes normality of ROS data)	0.00329	95% Percentile Bootstrap UCL	0.00329
95% BCA Bootstrap UCL	0.00399	95% Bootstrap t UCL	0.00467
95% H-UCL (Log ROS)	0.00714		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-6.566	95% H-UCL (KM -Log)	0.00173
KM SD (logged)	0.551	95% Critical H Value (KM-Log)	1.818
KM Standard Error of Mean (logged)	0.0325		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00253	Mean in Log Scale	-7.09
SD in Original Scale	0.0133	SD in Log Scale	0.819
95% t UCL (Assumes normality)	0.00372	95% H-Stat UCL	0.00127
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00411	95% KM (Percentile Bootstrap) UCL	0.00411
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (pcb aroclors (ug/l)***total pcb aroclors (u = 0) (mdl)***tpcb_On_mdl***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	51
Number of Detects	55	Number of Non-Detects	280
Number of Distinct Detects	43	Number of Distinct Non-Detects	10
Minimum Detect	0.0046	Minimum Non-Detect	0.0028
Maximum Detect	0.19	Maximum Non-Detect	0.029
Variance Detects	9.46E-04	Percent Non-Detects	83.58%
Mean Detects	0.0284	SD Detects	0.0308

Median Detects	0.019	CV Detects	1.083
Skewness Detects	3.203	Kurtosis Detects	13.79
Mean of Logged Detects	-3.947	SD of Logged Detects	0.865
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.689	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	1.54E-14	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.22	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.119	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00706	Standard Error of Mean	8.61E-04
SD	0.0156	95% KM (BCA) UCL	0.00882
95% KM (t) UCL	0.00848	95% KM (Percentile Bootstrap) UCL	0.00858
95% KM (z) UCL	0.00848	95% KM Bootstrap t UCL	0.00902
90% KM Chebyshev UCL	0.00965	95% KM Chebyshev UCL	0.0108
97.5% KM Chebyshev UCL	0.0124	99% KM Chebyshev UCL	0.0156
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.852	Anderson-Darling GOF Test	
5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0868	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.122	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.44	k star (bias corrected MLE)	1.374
Theta hat (MLE)	0.0197	Theta star (bias corrected MLE)	0.0207
nu hat (MLE)	158.4	nu star (bias corrected)	151.1
MLE Mean (bias corrected)	0.0284	MLE Sd (bias corrected)	0.0242
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.205	nu hat (KM)	137.7
Approximate Chi Square Value (137.67, α)	111.6	Adjusted Chi Square Value (137.67, β)	111.5
95% Gamma Approximate KM-UCL (use when n>=50)	0.00872	95% Gamma Adjusted KM-UCL (use when n<50)	0.00872
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0046	Mean	0.013
Maximum	0.19	Median	0.01
SD	0.0141	CV	1.085
k hat (MLE)	3.364	k star (bias corrected MLE)	3.336
Theta hat (MLE)	0.00387	Theta star (bias corrected MLE)	0.0039
nu hat (MLE)	2254	nu star (bias corrected)	2235
MLE Mean (bias corrected)	0.013	MLE Sd (bias corrected)	0.00713
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2126	Adjusted Chi Square Value (N/A, β)	2126
95% Gamma Approximate UCL (use when n>=50)	0.0137	95% Gamma Adjusted UCL (use when n<50)	0.0137
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0747	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.119	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00581	Mean in Log Scale	-6.814
SD in Original Scale	0.016	SD in Log Scale	1.868
95% t UCL (assumes normality of ROS data)	0.00726	95% Percentile Bootstrap UCL	0.00731
95% BCA Bootstrap UCL	0.00763	95% Bootstrap t UCL	0.00761
95% H-UCL (Log ROS)	0.0085		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.552	95% H-UCL (KM -Log)	0.00582
KM SD (logged)	0.8	95% Critical H Value (KM-Log)	1.972
KM Standard Error of Mean (logged)	0.0445		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00651	Mean in Log Scale	-5.992
SD in Original Scale	0.0159	SD in Log Scale	1.098
95% t UCL (Assumes normality)	0.00794	95% H-Stat UCL	0.00521
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	0.00848	95% GROS Approximate Gamma UCL	0.0137
95% Approximate Gamma KM-UCL	0.00872		
<p>Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.</p> <p>These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.</p>			
RESULT_VALUE_MDL (pcb congeners (ng/l)***total nondioxin-like pcb congener (km) (mdl)***tndpcbcong_km_mdl***ng/l***t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	123
Number of Detects	121	Number of Non-Detects	2
Number of Distinct Detects	121	Number of Distinct Non-Detects	2
Minimum Detect	1.364	Minimum Non-Detect	0.632
Maximum Detect	77.15	Maximum Non-Detect	9.222
Variance Detects	51.39	Percent Non-Detects	1.63%
Mean Detects	7.619	SD Detects	7.169
Median Detects	6.552	CV Detects	0.941
Skewness Detects	7.809	Kurtosis Detects	74.67
Mean of Logged Detects	1.868	SD of Logged Detects	0.52
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.458	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.242	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0805	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.548	Standard Error of Mean	0.644
SD	7.112	95% KM (BCA) UCL	8.828
95% KM (t) UCL	8.615	95% KM (Percentile Bootstrap) UCL	8.721
95% KM (z) UCL	8.607	95% KM Bootstrap t UCL	9.647
90% KM Chebyshev UCL	9.48	95% KM Chebyshev UCL	10.36
97.5% KM Chebyshev UCL	11.57	99% KM Chebyshev UCL	13.96
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.926	Anderson-Darling GOF Test	
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0845	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.228	k star (bias corrected MLE)	3.154
Theta hat (MLE)	2.36	Theta star (bias corrected MLE)	2.416
nu hat (MLE)	781.2	nu star (bias corrected)	763.2
MLE Mean (bias corrected)	7.619	MLE Sd (bias corrected)	4.291
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.126	nu hat (KM)	277
Approximate Chi Square Value (277.03, α)	239.5	Adjusted Chi Square Value (277.03, β)	239.1
95% Gamma Approximate KM-UCL (use when n>=50)	8.731	95% Gamma Adjusted KM-UCL (use when n<50)	8.746
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	7.54
Maximum	77.15	Median	6.46
SD	7.145	CV	0.948
k hat (MLE)	2.578	k star (bias corrected MLE)	2.52
Theta hat (MLE)	2.925	Theta star (bias corrected MLE)	2.992
nu hat (MLE)	634.1	nu star (bias corrected)	620
MLE Mean (bias corrected)	7.54	MLE Sd (bias corrected)	4.75
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (619.99, α)	563.2	Adjusted Chi Square Value (619.99, β)	562.6
95% Gamma Approximate UCL (use when n>=50)	8.3	95% Gamma Adjusted UCL (use when n<50)	8.309
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0902	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0805	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			

Mean in Original Scale	7.554	Mean in Log Scale	1.855
SD in Original Scale	7.133	SD in Log Scale	0.531
95% t UCL (assumes normality of ROS data)	8.62	95% Percentile Bootstrap UCL	8.688
95% BCA Bootstrap UCL	9.338	95% Bootstrap t UCL	9.593
95% H-UCL (Log ROS)	8.044		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.536	Mean in Log Scale	1.841
SD in Original Scale	7.145	SD in Log Scale	0.584
95% t UCL (Assumes normality)	8.603	95% H-Stat UCL	8.249
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	8.828

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pcb congeners (ng/l)***total pcb congener (km) (mdl)***tpcbcong_km_mdl***ng/l***t)

General Statistics			
Total Number of Observations	123	Number of Distinct Observations	123
Number of Detects	121	Number of Non-Detects	2
Number of Distinct Detects	121	Number of Distinct Non-Detects	2
Minimum Detect	1.389	Minimum Non-Detect	0.655
Maximum Detect	91.59	Maximum Non-Detect	9.549
Variance Detects	70.62	Percent Non-Detects	1.63%
Mean Detects	8.112	SD Detects	8.404
Median Detects	6.763	CV Detects	1.036
Skewness Detects	8.362	Kurtosis Detects	82.37
Mean of Logged Detects	1.921	SD of Logged Detects	0.526

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.413	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.255	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0805	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	8.034	Standard Error of Mean	0.755
SD	8.331	95% KM (BCA) UCL	9.571
95% KM (t) UCL	9.285	95% KM (Percentile Bootstrap) UCL	9.373
95% KM (z) UCL	9.275	95% KM Bootstrap t UCL	10.69
90% KM Chebyshev UCL	10.3	95% KM Chebyshev UCL	11.32
97.5% KM Chebyshev UCL	12.75	99% KM Chebyshev UCL	15.54

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.39	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.127	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0846	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	3.051	k star (bias corrected MLE)	2.981
Theta hat (MLE)	2.658	Theta star (bias corrected MLE)	2.721
nu hat (MLE)	738.4	nu star (bias corrected)	721.5
MLE Mean (bias corrected)	8.112	MLE Sd (bias corrected)	4.698

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.93	nu hat (KM)	228.8
Approximate Chi Square Value (228.76, α)	194.8	Adjusted Chi Square Value (228.76, β)	194.4
95% Gamma Approximate KM-UCL (use when n>=50)	9.437	95% Gamma Adjusted KM-UCL (use when n<50)	9.455

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	8.026
Maximum	91.59	Median	6.761
SD	8.369	CV	1.043

k hat (MLE)	2.462	k star (bias corrected MLE)	2.407
Theta hat (MLE)	3.26	Theta star (bias corrected MLE)	3.334
nu hat (MLE)	605.5	nu star (bias corrected)	592.1
MLE Mean (bias corrected)	8.026	MLE Sd (bias corrected)	5.173
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (592.11, α)	536.7	Adjusted Chi Square Value (592.11, β)	536
95% Gamma Approximate UCL (use when n>=50)	8.855	95% Gamma Adjusted UCL (use when n<50)	8.865

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.0911 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0805 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	8.041	Mean in Log Scale	1.908
SD in Original Scale	8.357	SD in Log Scale	0.537
95% t UCL (assumes normality of ROS data)	9.29	95% Percentile Bootstrap UCL	9.415
95% BCA Bootstrap UCL	10.27	95% Bootstrap t UCL	10.71
95% H-UCL (Log ROS)	8.513		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8.021	Mean in Log Scale	1.893
SD in Original Scale	8.369	SD in Log Scale	0.59
95% t UCL (Assumes normality)	9.272	95% H-Stat UCL	8.732
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	9.571

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pcb congeners (ng/l)***total pcb congener teq 1998 (avian) (km) (mdl)***tpcbcn'gc’pb98_km_mdl***ng/l****)

General Statistics			
Total Number of Observations	123	Number of Distinct Observations	123
Number of Detects	92	Number of Non-Detects	31
Number of Distinct Detects	92	Number of Distinct Non-Detects	31
Minimum Detect	3.25E-06	Minimum Non-Detect	7.82E-05
Maximum Detect	0.0123	Maximum Non-Detect	0.00125
Variance Detects	1.80E-06	Percent Non-Detects	25.20%
Mean Detects	0.00113	SD Detects	0.00134
Median Detects	8.74E-04	CV Detects	1.184
Skewness Detects	6.675	Kurtosis Detects	54.12
Mean of Logged Detects	-7.109	SD of Logged Detects	0.978

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.468
5% Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.249
5% Lilliefors Critical Value	0.0924
Detected Data Not Normal at 5% Significance Level	
Normal GOF Test on Detected Observations Only	
0 Detected Data Not Normal at 5% Significance Level	
Lilliefors GOF Test	
0.0924 Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.27E-04	Standard Error of Mean	1.11E-04
SD	0.00122	95% KM (BCA) UCL	0.00115
95% KM (t) UCL	1.11E-03	95% KM (Percentile Bootstrap) UCL	0.11%
95% KM (z) UCL	0.00111	95% KM Bootstrap t UCL	0.00125
90% KM Chebyshev UCL	1.26E-03	95% KM Chebyshev UCL	0.00141
97.5% KM Chebyshev UCL	0.00162	99% KM Chebyshev UCL	0.00203

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.999	Anderson-Darling GOF Test	
5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.137	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0948	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.676	k star (bias corrected MLE)	1.629
Theta hat (MLE)	6.76E-04	Theta star (bias corrected MLE)	6.96E-04
nu hat (MLE)	308.4	nu star (bias corrected)	299.7
MLE Mean (bias corrected)	0.00113	MLE Sd (bias corrected)	8.88E-04

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.579	nu hat (KM)	142.5
Approximate Chi Square Value (142.53, α)	115.9	Adjusted Chi Square Value (142.53, β)	115.7
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00114	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00114

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	3.25E-06	Mean	0.00337
Maximum	0.0123	Median	0.00102
SD	4.04E-03	CV	1.20E+00
k hat (MLE)	0.761	k star (bias corrected MLE)	0.748
Theta hat (MLE)	0.00442	Theta star (bias corrected MLE)	4.50E-03
nu hat (MLE)	187.3	nu star (bias corrected)	184.1
MLE Mean (bias corrected)	0.00337	MLE Sd (bias corrected)	0.00389
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (184.05, α)	153.7	Adjusted Chi Square Value (184.05, β)	153.3
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00403	95% Gamma Adjusted UCL (use when $n < 50$)	0.00404

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.188	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0924	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	9.17E-04	Mean in Log Scale	-7.405
SD in Original Scale	0.00122	SD in Log Scale	1.007
95% t UCL (assumes normality of ROS data)	0.0011	95% Percentile Bootstrap UCL	0.00112
95% BCA Bootstrap UCL	0.00121	95% Bootstrap t UCL	0.00125
95% H-UCL (Log ROS)	0.00123		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.29E-04	Mean in Log Scale	-7.39
SD in Original Scale	0.00121	SD in Log Scale	1.035
95% t UCL (Assumes normality)	0.00111	95% H-Stat UCL	0.0013
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	0.00115		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pcb congeners (ng/l)***total pcb congener teq 1998 (fish) (km) (mdl)***tpcbcnpcpf98_km_mdl***ng/l***t)

General Statistics			
Total Number of Observations	123	Number of Distinct Observations	123
Number of Detects	13	Number of Non-Detects	110
Number of Distinct Detects	13	Number of Distinct Non-Detects	110
Minimum Detect	4.15E-07	Minimum Non-Detect	3.13E-06
Maximum Detect	1.83E-05	Maximum Non-Detect	1.26E-04
Variance Detects	3.53E-11	Percent Non-Detects	89.43%
Mean Detects	6.47E-06	SD Detects	5.94E-06
Median Detects	2.87E-06	CV Detects	N/A
Skewness Detects	0.61	Kurtosis Detects	-0.914
Mean of Logged Detects	-12.52	SD of Logged Detects	1.232

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.843	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.866	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.267	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.246	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.68E-06	Standard Error of Mean	5.33E-07
SD	3.41E-06	95% KM (BCA) UCL	3.64E-06
95% KM (t) UCL	3.56E-06	95% KM (Percentile Bootstrap) UCL	3.58E-06
95% KM (z) UCL	3.56E-06	95% KM Bootstrap t UCL	3.86E-06
90% KM Chebyshev UCL	4.28E-06	95% KM Chebyshev UCL	5.00E-06

97.5% KM Chebyshev UCL

6.01E-06 99% KM Chebyshev UCL

7.98E-06

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.786	Anderson-Darling GOF Test	
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.246	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.243	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	1.01	k star (bias corrected MLE)	0.829
Theta hat (MLE)	6.41E-06	Theta star (bias corrected MLE)	7.81E-06
nu hat (MLE)	2.63E+01	nu star (bias corrected)	2.15E+01
MLE Mean (bias corrected)	6.47E-06	MLE Sd (bias corrected)	7.11E-06

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	6.17E-01	nu hat (KM)	1.52E+02
Approximate Chi Square Value (151.84, α)	124.4	Adjusted Chi Square Value (151.84, β)	124.1
95% Gamma Approximate KM-UCL (use when n>=50)	3.27E-06	95% Gamma Adjusted KM-UCL (use when n<50)	3.28E-06

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	4.15E-07	Mean	0.00894
Maximum	0.01	Median	0.01
SD	3.08E-03	CV	3.45E-01
k hat (MLE)	0.817	k star (bias corrected MLE)	0.802
Theta hat (MLE)	1.10E-02	Theta star (bias corrected MLE)	1.11E-02
nu hat (MLE)	200.9	nu star (bias corrected)	197.3
MLE Mean (bias corrected)	0.00894	MLE Sd (bias corrected)	0.00999
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (197.34, α)	165.8	Adjusted Chi Square Value (197.34, β)	165.5
95% Gamma Approximate UCL (use when n>=50)	1.06E-02	95% Gamma Adjusted UCL (use when n<50)	1.07E-02

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.894	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.866	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.253	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.246	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.15E-06	Mean in Log Scale	-13.24
SD in Original Scale	2.39E-06	SD in Log Scale	0.463
95% t UCL (assumes normality of ROS data)	2.51E-06	95% Percentile Bootstrap UCL	2.54E-06
95% BCA Bootstrap UCL	2.62E-06	95% Bootstrap t UCL	2.68E-06
95% H-UCL (Log ROS)	2.14E-06		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-13.29	95% H-UCL (KM -Log)	2.92E-06
KM SD (logged)	0.875	95% Critical H Value (KM-Log)	2.08
KM Standard Error of Mean (logged)	0.224		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8.68E-06	Mean in Log Scale	-11.94
SD in Original Scale	8.12E-06	SD in Log Scale	0.774
95% t UCL (Assumes normality)	9.89E-06	95% H-Stat UCL	1.01E-05
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	3.64E-06
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pcb congeners (ng/l)***total pcb congener teq 2005 (mammal) (km) (mdl)***tpcbcongcpm_km_mdl***ng/l***t)

General Statistics

Total Number of Observations	123	Number of Distinct Observations	123
Number of Detects	12	Number of Non-Detects	111
Number of Distinct Detects	12	Number of Distinct Non-Detects	111

Minimum Detect	1.12E-06	Minimum Non-Detect	3.20E-05
Maximum Detect	2.10E-04	Maximum Non-Detect	0.00199
Variance Detects	6.26E-09	Percent Non-Detects	90.24%
Mean Detects	7.49E-05	SD Detects	7.91E-05
Median Detects	6.06E-05	CV Detects	N/A
Skewness Detects	0.336	Kurtosis Detects	-1.628
Mean of Logged Detects	-10.95	SD of Logged Detects	2.248
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.802	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.305	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.256	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.27E-05	Standard Error of Mean	8.03E-06
SD	5.02E-05	95% KM (BCA) UCL	3.78E-05
95% KM (t) UCL	3.60E-05	95% KM (Percentile Bootstrap) UCL	3.58E-05
95% KM (z) UCL	3.59E-05	95% KM Bootstrap t UCL	4.10E-05
90% KM Chebyshev UCL	4.68E-05	95% KM Chebyshev UCL	5.77E-05
97.5% KM Chebyshev UCL	7.29E-05	99% KM Chebyshev UCL	1.03E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.286	Anderson-Darling GOF Test	
5% A-D Critical Value	0.796	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.286	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.261	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.445	k star (bias corrected MLE)	0.389
Theta hat (MLE)	1.68E-04	Theta star (bias corrected MLE)	1.92E-04
nu hat (MLE)	1.07E+01	nu star (bias corrected)	9.35E+00
MLE Mean (bias corrected)	7.49E-05	MLE Sd (bias corrected)	1.20E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.05E-01	nu hat (KM)	5.05E+01
Approximate Chi Square Value (50.53, α)	35.21	Adjusted Chi Square Value (50.53, β)	35.05
95% Gamma Approximate KM-UCL (use when n>=50)	3.26E-05	95% Gamma Adjusted KM-UCL (use when n<50)	3.28E-05
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.12E-06	Mean	0.00903
Maximum	0.01	Median	0.01
SD	2.96E-03	CV	3.27E-01
k hat (MLE)	1.103	k star (bias corrected MLE)	1.082
Theta hat (MLE)	8.19E-03	Theta star (bias corrected MLE)	8.35E-03
nu hat (MLE)	271.4	nu star (bias corrected)	266.1
MLE Mean (bias corrected)	0.00903	MLE Sd (bias corrected)	0.00868
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (266.08, α)	229.3	Adjusted Chi Square Value (266.08, β)	228.9
95% Gamma Approximate UCL (use when n>=50)	1.05E-02	95% Gamma Adjusted UCL (use when n<50)	1.05E-02
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.78	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.298	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.256	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.11E-05	Mean in Log Scale	-12.25
SD in Original Scale	3.17E-05	SD in Log Scale	0.811
95% t UCL (assumes normality of ROS data)	1.58E-05	95% Percentile Bootstrap UCL	1.62E-05
95% BCA Bootstrap UCL	1.73E-05	95% Bootstrap t UCL	1.90E-05
95% H-UCL (Log ROS)	7.69E-06		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.43E-04	Mean in Log Scale	-9.285
SD in Original Scale	1.40E-04	SD in Log Scale	1.143
95% t UCL (Assumes normality)	1.64E-04	95% H-Stat UCL	2.27E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
97.5% KM (Chebyshev) UCL7.29E-05

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***2,4'-ddd (o,p'-ddd)***53-19-0***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations65
Number of Detects	108	Number of Non-Detects254
Number of Distinct Detects	59	Number of Distinct Non-Detects16
Minimum Detect	1.50E-04	Minimum Non-Detect1.50E-04
Maximum Detect	0.0023	Maximum Non-Detect0.0016
Variance Detects	2.57E-07	Percent Non-Detects70.17%
Mean Detects	5.56E-04	SD Detects5.06E-04
Median Detects	3.60E-04	CV Detects0.911
Skewness Detects	1.871	Kurtosis Detects2.759
Mean of Logged Detects	-7.789	SD of Logged Detects0.716

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.712	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.274	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0853	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2.85E-04	Standard Error of Mean1.80E-05
SD	3.34E-04	95% KM (BCA) UCL3.19E-04
95% KM (t) UCL	3.14E-04	95% KM (Percentile Bootstrap) UCL3.15E-04
95% KM (z) UCL	3.14E-04	95% KM Bootstrap t UCL3.18E-04
90% KM Chebyshev UCL	3.39E-04	95% KM Chebyshev UCL3.63E-04
97.5% KM Chebyshev UCL	3.97E-04	99% KM Chebyshev UCL4.64E-04

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	5.803	Anderson-Darling GOF Test
5% A-D Critical Value	0.767	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.195	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0887	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.853	k star (bias corrected MLE)1.808
Theta hat (MLE)	3.00E-04	Theta star (bias corrected MLE)3.07E-04
nu hat (MLE)	4.00E+02	nu star (bias corrected)3.91E+02
MLE Mean (bias corrected)	5.56E-04	MLE Sd (bias corrected)4.13E-04

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	7.25E-01	nu hat (KM)5.25E+02
Approximate Chi Square Value (524.84, α)	472.7	Adjusted Chi Square Value (524.84, β)472.5
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	3.16E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)3.16E-04

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	1.50E-04	Mean0.00718
Maximum	0.01	Median0.01
SD	4.34E-03	CV6.04E-01
k hat (MLE)	0.94	k star (bias corrected MLE)0.934
Theta hat (MLE)	7.64E-03	Theta star (bias corrected MLE)7.69E-03
nu hat (MLE)	680.4	nu star (bias corrected)676.1
MLE Mean (bias corrected)	0.00718	MLE Sd (bias corrected)0.00743
		Adjusted Level of Significance (β)0.0493
Approximate Chi Square Value (676.06, α)	616.7	Adjusted Chi Square Value (676.06, β)616.5
95% Gamma Approximate UCL (use when $n \geq 50$)	7.87E-03	95% Gamma Adjusted UCL (use when $n < 50$)7.88E-03

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.145	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0853	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	2.29E-04	Mean in Log Scale	-9.106
SD in Original Scale	3.56E-04	SD in Log Scale	1.193
95% t UCL (assumes normality of ROS data)	2.60E-04	95% Percentile Bootstrap UCL	2.61E-04
95% BCA Bootstrap UCL	2.65E-04	95% Bootstrap t UCL	2.64E-04
95% H-UCL (Log ROS)	2.61E-04		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.00E-04	Mean in Log Scale	-8.604
SD in Original Scale	3.64E-04	SD in Log Scale	0.943
95% t UCL (Assumes normality)	3.32E-04	95% H-Stat UCL	3.17E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	3.14E-04	95% KM (% Bootstrap) UCL	3.15E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***2,4'-dde (o,p'-dde)***3424-82-6***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	40
Number of Detects	69	Number of Non-Detects	293
Number of Distinct Detects	32	Number of Distinct Non-Detects	16
Minimum Detect	1.40E-04	Minimum Non-Detect	1.40E-04
Maximum Detect	0.022	Maximum Non-Detect	0.0015
Variance Detects	7.64E-06	Percent Non-Detects	80.94%
Mean Detects	8.67E-04	SD Detects	2.76E-03
Median Detects	2.20E-04	CV Detects	3.186
Skewness Detects	6.894	Kurtosis Detects	51.99
Mean of Logged Detects	-8.041	SD of Logged Detects	1.016

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.283	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.396	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.107	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.84E-04	Standard Error of Mean	6.52E-05
SD	0.00123	95% KM (BCA) UCL	4.15E-04
95% KM (t) UCL	3.92E-04	95% KM (Percentile Bootstrap) UCL	3.93E-04
95% KM (z) UCL	3.91E-04	95% KM Bootstrap t UCL	6.11E-04
90% KM Chebyshev UCL	4.80E-04	95% KM Chebyshev UCL	5.68E-04
97.5% KM Chebyshev UCL	6.91E-04	99% KM Chebyshev UCL	9.33E-04

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	12.12	Anderson-Darling GOF Test	
5% A-D Critical Value	0.805	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.372	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.113	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.62	k star (bias corrected MLE)	0.603
Theta hat (MLE)	1.40E-03	Theta star (bias corrected MLE)	1.44E-03
nu hat (MLE)	85.6	nu star (bias corrected)	8.32E+01
MLE Mean (bias corrected)	8.67E-04	MLE Sd (bias corrected)	1.12E-03

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	5.32E-02	nu hat (KM)	38.54
Approximate Chi Square Value (38.54, α)	25.32	Adjusted Chi Square Value (38.54, β)	25.28
95% Gamma Approximate KM-UCL (use when n \geq 50)	4.32E-04	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	4.33E-04
Gamma (KM) may not be used when k hat (KM) is $<$ 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $>$ 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as $<$ 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.40E-04	Mean	0.00826
Maximum	0.022	Median	0.01

SD	0.00379	CV	0.459
k hat (MLE)	1.22E+00	k star (bias corrected MLE)	1.21
Theta hat (MLE)	0.00678	Theta star (bias corrected MLE)	0.00683
nu hat (MLE)	881.8	nu star (bias corrected)	875.8
MLE Mean (bias corrected)	0.00826	MLE Sd (bias corrected)	0.00751
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (875.79, α)	8.08E+02	Adjusted Chi Square Value (875.79, β)	8.08E+02
95% Gamma Approximate UCL (use when n>=50)	0.00895	95% Gamma Adjusted UCL (use when n<50)	0.00895

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.296 Lilliefors GOF Test
5% Lilliefors Critical Value	0.107 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.95E-04	Mean in Log Scale	-10.44
SD in Original Scale	0.00124	SD in Log Scale	1.749
95% t UCL (assumes normality of ROS data)	3.03E-04	95% Percentile Bootstrap UCL	3.13E-04
95% BCA Bootstrap UCL	4.12E-04	95% Bootstrap t UCL	5.23E-04
95% H-UCL (Log ROS)	1.75E-04		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.07E-04	Mean in Log Scale	-8.844
SD in Original Scale	0.00124	SD in Log Scale	0.922
95% t UCL (Assumes normality)	4.14E-04	95% H-Stat UCL	2.44E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use	
95% KM (BCA) UCL	4.15E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***2,4'-ddt (o,p'-ddt)***789-02-6***ug/l****)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	12
Number of Detects	4	Number of Non-Detects	358
Number of Distinct Detects	4	Number of Distinct Non-Detects	10
Minimum Detect	2.30E-04	Minimum Non-Detect	2.10E-04
Maximum Detect	0.0027	Maximum Non-Detect	0.0022
Variance Detects	1.51E-06	Percent Non-Detects	98.90%
Mean Detects	8.55E-04	SD Detects	0.00123
Median Detects	2.45E-04	CV Detects	1.439
Skewness Detects	2	Kurtosis Detects	3.999
Mean of Logged Detects	-7.73	SD of Logged Detects	1.211

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.636	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.439	Lilliefors GOF Test
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level
Detected Data appear Approximate Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.17E-04	Standard Error of Mean	7.93E-06
SD	1.31E-04	95% KM (BCA) UCL	N/A
95% KM (t) UCL	2.30E-04	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	2.30E-04	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	2.41E-04	95% KM Chebyshev UCL	2.52E-04
97.5% KM Chebyshev UCL	2.67E-04	99% KM Chebyshev UCL	2.96E-04

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.915	Anderson-Darling GOF Test	
5% A-D Critical Value	0.668	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.468	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.404	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.88	k star (bias corrected MLE)	0.387
Theta hat (MLE)	9.71E-04	Theta star (bias corrected MLE)	2.21E-03
nu hat (MLE)	7.04E+00	nu star (bias corrected)	3.094

MLE Mean (bias corrected)	8.55E-04	MLE Sd (bias corrected)	0.00137
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.76E+00	nu hat (KM)	2.00E+03
Approximate Chi Square Value (N/A, α)	1897	Adjusted Chi Square Value (N/A, β)	1896
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.29E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	2.29E-04

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.30E-04	Mean	0.0099
Maximum	0.01	Median	0.01
SD	9.64E-04	CV	0.0974
k hat (MLE)	20.68	k star (bias corrected MLE)	20.51
Theta hat (MLE)	4.79E-04	Theta star (bias corrected MLE)	4.83E-04
nu hat (MLE)	14971	nu star (bias corrected)	14849
MLE Mean (bias corrected)	0.0099	MLE Sd (bias corrected)	0.00219
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	14566	Adjusted Chi Square Value (N/A, β)	14565
95% Gamma Approximate UCL (use when $n \geq 50$)	1.01E-02	95% Gamma Adjusted UCL (use when $n < 50$)	N/A

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.656	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.429	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.13E-05	Mean in Log Scale	-16.69
SD in Original Scale	1.44E-04	SD in Log Scale	3.30E+00
95% t UCL (assumes normality of ROS data)	2.37E-05	95% Percentile Bootstrap UCL	2.60E-05
95% BCA Bootstrap UCL	3.93E-05	95% Bootstrap t UCL	1.01E-04
95% H-UCL (Log ROS)	2.96E-05		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.46	95% H-UCL (KM -Log)	2.16E-04
KM SD (logged)	0.135	95% Critical H Value (KM-Log)	1.666
KM Standard Error of Mean (logged)	0.0082		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.34E-04	Mean in Log Scale	-8.73
SD in Original Scale	2.84E-04	SD in Log Scale	0.734
95% t UCL (Assumes normality)	2.59E-04	95% H-Stat UCL	2.28E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	2.30E-04	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***4,4'-ddd (p,p'-ddd)***72-54-8***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	39
Number of Detects	22	Number of Non-Detects	340
Number of Distinct Detects	21	Number of Distinct Non-Detects	22
Minimum Detect	6.80E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0134	Maximum Non-Detect	0.0067
Variance Detects	1.31E-05	Percent Non-Detects	93.92%
Mean Detects	0.00241	SD Detects	0.00362
Median Detects	0.00105	CV Detects	1.502
Skewness Detects	2.841	Kurtosis Detects	7.151
Mean of Logged Detects	-6.537	SD of Logged Detects	0.852

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.487	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.329	Lilliefors GOF Test	

5% Lilliefors Critical Value	0.189	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	6.25E-04	Standard Error of Mean	5.35E-05
SD	9.88E-04	95% KM (BCA) UCL	7.18E-04
95% KM (t) UCL	7.13E-04	95% KM (Percentile Bootstrap) UCL	7.22E-04
95% KM (z) UCL	7.13E-04	95% KM Bootstrap t UCL	9.01E-04
90% KM Chebyshev UCL	7.86E-04	95% KM Chebyshev UCL	8.58E-04
97.5% KM Chebyshev UCL	9.59E-04	99% KM Chebyshev UCL	0.00116
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.883	Anderson-Darling GOF Test	
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.282	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.19	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.12	k star (bias corrected MLE)	0.997
Theta hat (MLE)	2.15E-03	Theta star (bias corrected MLE)	2.42E-03
nu hat (MLE)	4.93E+01	nu star (bias corrected)	4.39E+01
MLE Mean (bias corrected)	2.41E-03	MLE Sd (bias corrected)	2.41E-03
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.4	nu hat (KM)	289.7
Approximate Chi Square Value (289.65, α)	251.2	Adjusted Chi Square Value (289.65, β)	251.1
95% Gamma Approximate KM-UCL (use when n>=50)	7.21E-04	95% Gamma Adjusted KM-UCL (use when n<50)	7.21E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	6.80E-04	Mean	0.00954
Maximum	0.0134	Median	0.01
SD	0.00201	CV	0.211
k hat (MLE)	7.286	k star (bias corrected MLE)	7.227
Theta hat (MLE)	0.00131	Theta star (bias corrected MLE)	0.00132
nu hat (MLE)	5275	nu star (bias corrected)	5232
MLE Mean (bias corrected)	0.00954	MLE Sd (bias corrected)	0.00355
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	5065	Adjusted Chi Square Value (N/A, β)	5065
95% Gamma Approximate UCL (use when n>=50)	9.85E-03	95% Gamma Adjusted UCL (use when n<50)	9.85E-03
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.769	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.211	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.189	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.08E-04	Mean in Log Scale	-10.52
SD in Original Scale	0.00104	SD in Log Scale	1.933
95% t UCL (assumes normality of ROS data)	2.98E-04	95% Percentile Bootstrap UCL	3.03E-04
95% BCA Bootstrap UCL	3.37E-04	95% Bootstrap t UCL	4.58E-04
95% H-UCL (Log ROS)	2.38E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.83E-04	Mean in Log Scale	-7.61
SD in Original Scale	0.00124	SD in Log Scale	0.795
95% t UCL (Assumes normality)	8.91E-04	95% H-Stat UCL	7.38E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	7.13E-04	95% KM (% Bootstrap) UCL	7.22E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***4,4'-ddt (p,p'-ddt)***50-29-3***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 33
Number of Detects	18	Number of Non-Detects 344
Number of Distinct Detects	14	Number of Distinct Non-Detects 24
Minimum Detect	7.80E-04	Minimum Non-Detect 5.00E-04
Maximum Detect	0.0042	Maximum Non-Detect 0.0074
Variance Detects	1.23E-06	Percent Non-Detects 95.03%
Mean Detects	1.61E-03	SD Detects 1.11E-03
Median Detects	9.80E-04	CV Detects 0.689
Skewness Detects	1.348	Kurtosis Detects 0.666
Mean of Logged Detects	-6.618	SD of Logged Detects 0.592
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.757	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.275	Lilliefors GOF Test
5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	5.64E-04	Standard Error of Mean 2.07E-05
SD	3.60E-04	95% KM (BCA) UCL 6.04E-04
95% KM (t) UCL	5.99E-04	95% KM (Percentile Bootstrap) UCL 6.00E-04
95% KM (z) UCL	5.99E-04	95% KM Bootstrap t UCL 6.13E-04
90% KM Chebyshev UCL	6.27E-04	95% KM Chebyshev UCL 6.55E-04
97.5% KM Chebyshev UCL	6.94E-04	99% KM Chebyshev UCL 7.71E-04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.566	Anderson-Darling GOF Test
5% A-D Critical Value	0.747	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.261	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.205	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.877	k star (bias corrected MLE) 2.434
Theta hat (MLE)	5.58E-04	Theta star (bias corrected MLE) 6.60E-04
nu hat (MLE)	1.04E+02	nu star (bias corrected) 8.76E+01
MLE Mean (bias corrected)	1.61E-03	MLE Sd (bias corrected) 1.03E-03
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.46E+00	nu hat (KM) 1781
Approximate Chi Square Value (N/A, α)	1684	Adjusted Chi Square Value (N/A, β) 1684
95% Gamma Approximate KM-UCL (use when n>=50)	5.97E-04	95% Gamma Adjusted KM-UCL (use when n<50) 5.97E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	7.80E-04	Mean 0.00958
Maximum	0.01	Median 0.01
SD	1.84E-03	CV 1.92E-01
k hat (MLE)	8.866	k star (bias corrected MLE) 8.795
Theta hat (MLE)	0.00108	Theta star (bias corrected MLE) 0.00109
nu hat (MLE)	6419	nu star (bias corrected) 6367
MLE Mean (bias corrected)	0.00958	MLE Sd (bias corrected) 0.00323
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	6183	Adjusted Chi Square Value (N/A, β) 6182
95% Gamma Approximate UCL (use when n>=50)	9.87E-03	95% Gamma Adjusted UCL (use when n<50) 9.87E-03
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.816	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.243	Lilliefors GOF Test
5% Lilliefors Critical Value	0.209	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.82E-04	Mean in Log Scale -9.648
SD in Original Scale	4.24E-04	SD in Log Scale 1.404
95% t UCL (assumes normality of ROS data)	2.19E-04	95% Percentile Bootstrap UCL 2.20E-04
95% BCA Bootstrap UCL	2.26E-04	95% Bootstrap t UCL 2.31E-04
95% H-UCL (Log ROS)	2.08E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	7.79E-04	Mean in Log Scale -7.555
SD in Original Scale	9.15E-04	SD in Log Scale 0.768

95% t UCL (Assumes normality)

8.58E-04

95% H-Stat UCL

7.61E-04

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL

5.99E-04

95% KM (% Bootstrap) UCL

6.00E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***aldrin***309-00-2***ug/l***t)

General Statistics			
Total Number of Observations	360	Number of Distinct Observations	32
Number of Detects	7	Number of Non-Detects	353
Number of Distinct Detects	5	Number of Distinct Non-Detects	28
Minimum Detect	9.00E-04	Minimum Non-Detect	7.80E-04
Maximum Detect	0.0085	Maximum Non-Detect	0.0083
Variance Detects	9.66E-06	Percent Non-Detects	98.06%
Mean Detects	2.87E-03	SD Detects	3.11E-03
Median Detects	0.0012	CV Detects	1.084
Skewness Detects	1.43	Kurtosis Detects	0.431
Mean of Logged Detects	-6.285	SD of Logged Detects	0.935

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.683	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.418	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	8.23E-04	Standard Error of Mean	2.88E-05
SD	5.00E-04	95% KM (BCA) UCL	8.78E-04
95% KM (t) UCL	8.71E-04	95% KM (Percentile Bootstrap) UCL	8.70E-04
95% KM (z) UCL	8.70E-04	95% KM Bootstrap t UCL	0.00116
90% KM Chebyshev UCL	9.09E-04	95% KM Chebyshev UCL	9.49E-04
97.5% KM Chebyshev UCL	0.001	99% KM Chebyshev UCL	0.00111

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.141	Anderson-Darling GOF Test	
5% A-D Critical Value	0.724	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.426	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.318	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.303	k star (bias corrected MLE)	0.84
Theta hat (MLE)	2.20E-03	Theta star (bias corrected MLE)	3.41E-03
nu hat (MLE)	1.82E+01	nu star (bias corrected)	11.76
MLE Mean (bias corrected)	0.00287	MLE Sd (bias corrected)	0.00313

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.709	nu hat (KM)	1950
Approximate Chi Square Value (N/A, α)	1849	Adjusted Chi Square Value (N/A, β)	1848
95% Gamma Approximate KM-UCL (use when n>=50)	8.68E-04	95% Gamma Adjusted KM-UCL (use when n<50)	8.68E-04

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	9.00E-04	Mean	0.00986
Maximum	0.01	Median	0.01
SD	0.00107	CV	0.108
k hat (MLE)	26.91	k star (bias corrected MLE)	26.69
Theta hat (MLE)	3.66E-04	Theta star (bias corrected MLE)	3.70E-04
nu hat (MLE)	19374	nu star (bias corrected)	19214
MLE Mean (bias corrected)	0.00986	MLE Sd (bias corrected)	0.00191
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	18893	Adjusted Chi Square Value (N/A, β)	18892
95% Gamma Approximate UCL (use when n>=50)	0.01	95% Gamma Adjusted UCL (use when n<50)	0.01

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.73	Shapiro Wilk GOF Test	

5% Shapiro Wilk Critical Value	0.803	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.395	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.96E-05	Mean in Log Scale	-12.39
SD in Original Scale	5.65E-04	SD in Log Scale	2.32E+00
95% t UCL (assumes normality of ROS data)	1.29E-04	95% Percentile Bootstrap UCL	1.32E-04
95% BCA Bootstrap UCL	1.56E-04	95% Bootstrap t UCL	2.71E-04
95% H-UCL (Log ROS)	9.34E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8.78E-04	Mean in Log Scale	-7.425
SD in Original Scale	0.00109	SD in Log Scale	0.74
95% t UCL (Assumes normality)	9.72E-04	95% H-Stat UCL	8.45E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	8.71E-04	95% KM (% Bootstrap) UCL	8.70E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (pesticides (ug/l)***chlordane, beta- (chlordane, trans-)***5103-74-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	52
Number of Detects	75	Number of Non-Detects	287
Number of Distinct Detects	36	Number of Distinct Non-Detects	21
Minimum Detect	0.0011	Minimum Non-Detect	5.00E-04
Maximum Detect	0.014	Maximum Non-Detect	0.0096
Variance Detects	4.83E-06	Percent Non-Detects	79.28%
Mean Detects	0.00299	SD Detects	0.0022
Median Detects	0.0025	CV Detects	0.735
Skewness Detects	3.025	Kurtosis Detects	10.77
Mean of Logged Detects	-5.975	SD of Logged Detects	0.528
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.672	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.245	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.102	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00109	Standard Error of Mean	8.01E-05
SD	0.00145	95% KM (BCA) UCL	0.00123
95% KM (t) UCL	1.23E-03	95% KM (Percentile Bootstrap) UCL	0.12%
95% KM (z) UCL	0.00123	95% KM Bootstrap t UCL	0.00126
90% KM Chebyshev UCL	0.00133	95% KM Chebyshev UCL	0.00144
97.5% KM Chebyshev UCL	0.00159	99% KM Chebyshev UCL	0.00189
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.705	Anderson-Darling GOF Test	
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.17	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.104	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.244	k star (bias corrected MLE)	3.123
Theta hat (MLE)	9.22E-04	Theta star (bias corrected MLE)	9.57E-04
nu hat (MLE)	486.6	nu star (bias corrected)	468.5
MLE Mean (bias corrected)	0.00299	MLE Sd (bias corrected)	0.00169
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.567	nu hat (KM)	410.7
Approximate Chi Square Value (410.65, α)	364.7	Adjusted Chi Square Value (410.65, β)	364.5
95% Gamma Approximate KM-UCL (use when n>=50)	0.00123	95% Gamma Adjusted KM-UCL (use when n<50)	0.00123
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			

GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0011	Mean	0.00855
Maximum	0.014	Median	0.01
SD	3.01E-03	CV	3.53E-01
k hat (MLE)	4.103	k star (bias corrected MLE)	4.07
Theta hat (MLE)	0.00208	Theta star (bias corrected MLE)	0.0021
nu hat (MLE)	2970	nu star (bias corrected)	2947
MLE Mean (bias corrected)	0.00855	MLE Sd (bias corrected)	0.00424
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2822	Adjusted Chi Square Value (N/A, β)	2821
95% Gamma Approximate UCL (use when n>=50)	0.00893	95% Gamma Adjusted UCL (use when n<50)	0.00893
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.124	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.102	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00111	Mean in Log Scale	-7.294
SD in Original Scale	0.00144	SD in Log Scale	0.969
95% t UCL (assumes normality of ROS data)	0.00123	95% Percentile Bootstrap UCL	0.00124
95% BCA Bootstrap UCL	0.00126	95% Bootstrap t UCL	0.00126
95% H-UCL (Log ROS)	0.00121		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00144	Mean in Log Scale	-7.035
SD in Original Scale	0.00168	SD in Log Scale	0.944
95% t UCL (Assumes normality)	0.00159	95% H-Stat UCL	0.00152
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00123	95% KM (% Bootstrap) UCL	0.00122
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (pesticides (ug/l)***endosulfan sulfate***1031-07-8***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	28
Number of Detects	13	Number of Non-Detects	349
Number of Distinct Detects	10	Number of Distinct Non-Detects	20
Minimum Detect	6.10E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0015	Maximum Non-Detect	0.0057
Variance Detects	9.26E-08	Percent Non-Detects	96.41%
Mean Detects	9.50E-04	SD Detects	3.04E-04
Median Detects	8.50E-04	CV Detects	0.32
Skewness Detects	0.956	Kurtosis Detects	-0.262
Mean of Logged Detects	-7.002	SD of Logged Detects	0.3
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.867	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.866	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.246	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.20E-04	Standard Error of Mean	6.67E-06
SD	1.10E-04	95% KM (BCA) UCL	5.32E-04
95% KM (t) UCL	5.31E-04	95% KM (Percentile Bootstrap) UCL	5.31E-04
95% KM (z) UCL	5.31E-04	95% KM Bootstrap t UCL	5.34E-04
90% KM Chebyshev UCL	5.40E-04	95% KM Chebyshev UCL	5.49E-04
97.5% KM Chebyshev UCL	5.62E-04	99% KM Chebyshev UCL	5.86E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.505	Anderson-Darling GOF Test	
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.161	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.237	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	11.7	k star (bias corrected MLE) 9.051
Theta hat (MLE)	8.12E-05	Theta star (bias corrected MLE) 1.05E-04
nu hat (MLE)	3.04E+02	nu star (bias corrected) 2.35E+02
MLE Mean (bias corrected)	9.50E-04	MLE Sd (bias corrected) 3.16E-04

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.22E+01	nu hat (KM) 1.60E+04
Approximate Chi Square Value (N/A, α)	15751	Adjusted Chi Square Value (N/A, β) 15750
95% Gamma Approximate KM-UCL (use when n>=50)	5.30E-04	95% Gamma Adjusted KM-UCL (use when n<50) 5.30E-04

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	6.10E-04	Mean 0.00967
Maximum	0.01	Median 0.01
SD	1.69E-03	CV 1.74E-01
k hat (MLE)	9.589	k star (bias corrected MLE) 9.511
Theta hat (MLE)	1.01E-03	Theta star (bias corrected MLE) 1.02E-03
nu hat (MLE)	6942	nu star (bias corrected) 6886
MLE Mean (bias corrected)	0.00967	MLE Sd (bias corrected) 0.00314
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	6694	Adjusted Chi Square Value (N/A, β) 6694
95% Gamma Approximate UCL (use when n>=50)	9.95E-03	95% Gamma Adjusted UCL (use when n<50) 9.95E-03

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.866	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.146	Lilliefors GOF Test
5% Lilliefors Critical Value	0.246	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.03E-04	Mean in Log Scale -8.832
SD in Original Scale	1.97E-04	SD in Log Scale 0.803
95% t UCL (assumes normality of ROS data)	2.20E-04	95% Percentile Bootstrap UCL 2.20E-04
95% BCA Bootstrap UCL	2.24E-04	95% Bootstrap t UCL 2.23E-04
95% H-UCL (Log ROS)	2.19E-04	

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-7.574	95% H-UCL (KM -Log) 5.25E-04
KM SD (logged)	0.137	95% Critical H Value (KM-Log) 1.667
KM Standard Error of Mean (logged)	0.0083	

DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	5.83E-04	Mean in Log Scale -7.815
SD in Original Scale	6.70E-04	SD in Log Scale 0.734
95% t UCL (Assumes normality)	6.41E-04	95% H-Stat UCL 5.69E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	5.31E-04	95% KM (Percentile Bootstrap) UCL 5.31E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***endosulfan, beta (ii)***33213-65-9***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 25
Number of Detects	8	Number of Non-Detects 354
Number of Distinct Detects	5	Number of Distinct Non-Detects 22
Minimum Detect	9.70E-04	Minimum Non-Detect 5.00E-04
Maximum Detect	0.0034	Maximum Non-Detect 0.0098
Variance Detects	6.63E-07	Percent Non-Detects 97.79%
Mean Detects	1.41E-03	SD Detects 8.14E-04
Median Detects	0.00115	CV Detects 0.579
Skewness Detects	2.718	Kurtosis Detects 7.535
Mean of Logged Detects	-6.66	SD of Logged Detects 0.408

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.55	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.426	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.25E-04	Standard Error of Mean	1.20E-05
SD	1.93E-04	95% KM (BCA) UCL	5.47E-04
95% KM (t) UCL	5.45E-04	95% KM (Percentile Bootstrap) UCL	5.45E-04
95% KM (z) UCL	5.45E-04	95% KM Bootstrap t UCL	5.57E-04
90% KM Chebyshev UCL	5.61E-04	95% KM Chebyshev UCL	5.77E-04
97.5% KM Chebyshev UCL	6.00E-04	99% KM Chebyshev UCL	6.44E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.459	Anderson-Darling GOF Test	
5% A-D Critical Value	0.719	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.39	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.295	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.568	k star (bias corrected MLE)	3.563
Theta hat (MLE)	2.52E-04	Theta star (bias corrected MLE)	3.94E-04
nu hat (MLE)	8.91E+01	nu star (bias corrected)	5.70E+01
MLE Mean (bias corrected)	1.41E-03	MLE Sd (bias corrected)	7.44E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	7.43E+00	nu hat (KM)	5.38E+03
Approximate Chi Square Value (N/A, α)	5209	Adjusted Chi Square Value (N/A, β)	5208
95% Gamma Approximate KM-UCL (use when n>=50)	5.42E-04	95% Gamma Adjusted KM-UCL (use when n<50)	5.42E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	9.70E-04	Mean	0.00981
Maximum	0.01	Median	0.01
SD	1.27E-03	CV	1.29E-01
k hat (MLE)	19.22	k star (bias corrected MLE)	19.06
Theta hat (MLE)	5.10E-04	Theta star (bias corrected MLE)	5.15E-04
nu hat (MLE)	13917	nu star (bias corrected)	13803
MLE Mean (bias corrected)	0.00981	MLE Sd (bias corrected)	0.00225
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	13530	Adjusted Chi Square Value (N/A, β)	13529
95% Gamma Approximate UCL (use when n>=50)	1.00E-02	95% Gamma Adjusted UCL (use when n<50)	1.00E-02
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.654	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.361	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.59E-04	Mean in Log Scale	-9.339
SD in Original Scale	2.54E-04	SD in Log Scale	1.07E+00
95% t UCL (assumes normality of ROS data)	1.81E-04	95% Percentile Bootstrap UCL	1.82E-04
95% BCA Bootstrap UCL	1.85E-04	95% Bootstrap t UCL	1.89E-04
95% H-UCL (Log ROS)	1.76E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.66E-04	Mean in Log Scale	-7.337
SD in Original Scale	0.00116	SD in Log Scale	0.761
95% t UCL (Assumes normality)	0.00107	95% H-Stat UCL	9.40E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	5.45E-04	95% KM (% Bootstrap) UCL	5.45E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***endrin aldehyde***7421-93-4***ug/l***t)

General Statistics			
Total Number of Observations	354	Number of Distinct Observations	31
Number of Detects	10	Number of Non-Detects	344
Number of Distinct Detects	10	Number of Distinct Non-Detects	27
Minimum Detect	8.80E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.01	Maximum Non-Detect	0.009
Variance Detects	8.50E-06	Percent Non-Detects	97.18%
Mean Detects	2.66E-03	SD Detects	2.92E-03
Median Detects	0.0013	CV Detects	1.098
Skewness Detects	2.124	Kurtosis Detects	4.629
Mean of Logged Detects	-6.316	SD of Logged Detects	0.848
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.671	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.354	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.67E-04	Standard Error of Mean	3.39E-05
SD	5.95E-04	95% KM (BCA) UCL	6.30E-04
95% KM (t) UCL	6.23E-04	95% KM (Percentile Bootstrap) UCL	6.25E-04
95% KM (z) UCL	6.23E-04	95% KM Bootstrap t UCL	6.79E-04
90% KM Chebyshev UCL	6.69E-04	95% KM Chebyshev UCL	7.15E-04
97.5% KM Chebyshev UCL	7.79E-04	99% KM Chebyshev UCL	9.04E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.079	Anderson-Darling GOF Test	
5% A-D Critical Value	0.74	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.331	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.271	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.441	k star (bias corrected MLE)	1.075
Theta hat (MLE)	1.84E-03	Theta star (bias corrected MLE)	2.47E-03
nu hat (MLE)	2.88E+01	nu star (bias corrected)	2.15E+01
MLE Mean (bias corrected)	2.66E-03	MLE Sd (bias corrected)	2.56E-03
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	9.08E-01	nu hat (KM)	642.7
Approximate Chi Square Value (642.71, α)	584.9	Adjusted Chi Square Value (642.71, β)	584.7
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.23E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	6.23E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	8.80E-04	Mean	0.00979
Maximum	0.01	Median	0.01
SD	0.0013	CV	0.133
k hat (MLE)	18.43	k star (bias corrected MLE)	18.27
Theta hat (MLE)	5.31E-04	Theta star (bias corrected MLE)	5.36E-04
nu hat (MLE)	13047	nu star (bias corrected)	12938
MLE Mean (bias corrected)	0.00979	MLE Sd (bias corrected)	0.00229
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	12674	Adjusted Chi Square Value (N/A, β)	12673
95% Gamma Approximate UCL (use when $n \geq 50$)	1.00E-02	95% Gamma Adjusted UCL (use when $n < 50$)	1.00E-02
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.811	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.287	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.14E-04	Mean in Log Scale	-11.43
SD in Original Scale	6.41E-04	SD in Log Scale	2.08E+00
95% t UCL (assumes normality of ROS data)	1.70E-04	95% Percentile Bootstrap UCL	1.77E-04
95% BCA Bootstrap UCL	1.96E-04	95% Bootstrap t UCL	2.64E-04
95% H-UCL (Log ROS)	1.33E-04		

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	9.35E-04	Mean in Log Scale -7.396
SD in Original Scale	0.0012	SD in Log Scale 0.778
95% t UCL (Assumes normality)	0.00104	95% H-Stat UCL 9.00E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	6.23E-04	95% KM (% Bootstrap) UCL 6.25E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***endrin ketone***53494-70-5***ug/l***t)

General Statistics		
Total Number of Observations	361	Number of Distinct Observations 32
Number of Detects	9	Number of Non-Detects 352
Number of Distinct Detects	8	Number of Distinct Non-Detects 25
Minimum Detect	0.0011	Minimum Non-Detect 5.00E-04
Maximum Detect	0.0052	Maximum Non-Detect 0.0092
Variance Detects	2.00E-06	Percent Non-Detects 97.51%
Mean Detects	2.61E-03	SD Detects 1.41E-03
Median Detects	0.002	CV Detects 0.541
Skewness Detects	0.957	Kurtosis Detects -0.421
Mean of Logged Detects	-6.07	SD of Logged Detects 0.518

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.254	Lilliefors GOF Test
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	5.62E-04	Standard Error of Mean 2.51E-05
SD	4.19E-04	95% KM (BCA) UCL 6.07E-04
95% KM (t) UCL	6.03E-04	95% KM (Percentile Bootstrap) UCL 6.05E-04
95% KM (z) UCL	6.03E-04	95% KM Bootstrap t UCL 6.15E-04
90% KM Chebyshev UCL	6.37E-04	95% KM Chebyshev UCL 6.71E-04
97.5% KM Chebyshev UCL	7.19E-04	99% KM Chebyshev UCL 8.12E-04

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.432	Anderson-Darling GOF Test
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.203	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.28	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	4.248	k star (bias corrected MLE) 2.906
Theta hat (MLE)	6.15E-04	Theta star (bias corrected MLE) 8.98E-04
nu hat (MLE)	7.65E+01	nu star (bias corrected) 5.23E+01
MLE Mean (bias corrected)	2.61E-03	MLE Sd (bias corrected) 1.53E-03

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.80E+00	nu hat (KM) 1.30E+03
Approximate Chi Square Value (N/A, α)	1219	Adjusted Chi Square Value (N/A, β) 1218
95% Gamma Approximate KM-UCL (use when n>=50)	6.00E-04	95% Gamma Adjusted KM-UCL (use when n<50) 6.00E-04

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0011	Mean 0.00982
Maximum	0.01	Median 0.01
SD	1.17E-03	CV 1.19E-01
k hat (MLE)	28.05	k star (bias corrected MLE) 27.82
Theta hat (MLE)	3.50E-04	Theta star (bias corrected MLE) 3.53E-04
nu hat (MLE)	20250	nu star (bias corrected) 20083
MLE Mean (bias corrected)	0.00982	MLE Sd (bias corrected) 0.00186
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	19754	Adjusted Chi Square Value (N/A, β) 19753

95% Gamma Approximate UCL (use when n>=50)	9.98E-03	95% Gamma Adjusted UCL (use when n<50)	9.98E-03
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.939	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.17	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.14E-04	Mean in Log Scale	-9.385
SD in Original Scale	4.77E-04	SD in Log Scale	1.33E+00
95% t UCL (assumes normality of ROS data)	2.55E-04	95% Percentile Bootstrap UCL	2.54E-04
95% BCA Bootstrap UCL	2.64E-04	95% Bootstrap t UCL	2.70E-04
95% H-UCL (Log ROS)	2.42E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.555	95% H-UCL (KM -Log)	5.56E-04
KM SD (logged)	0.272	95% Critical H Value (KM-Log)	1.702
KM Standard Error of Mean (logged)	0.0165		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.47E-04	Mean in Log Scale	-7.371
SD in Original Scale	0.00113	SD in Log Scale	0.778
95% t UCL (Assumes normality)	0.00105	95% H-Stat UCL	9.23E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	6.03E-04	95% KM (Percentile Bootstrap) UCL	6.05E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (pesticides (ug/l)***heptachlor***76-44-8***ug/l****)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	31
Number of Detects	14	Number of Non-Detects	348
Number of Distinct Detects	14	Number of Distinct Non-Detects	21
Minimum Detect	9.50E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0076	Maximum Non-Detect	0.0099
Variance Detects	3.01E-06	Percent Non-Detects	96.13%
Mean Detects	2.35E-03	SD Detects	1.73E-03
Median Detects	0.002	CV Detects	0.738
Skewness Detects	2.359	Kurtosis Detects	6.665
Mean of Logged Detects	-6.234	SD of Logged Detects	0.589
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.74	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.226	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.85E-04	Standard Error of Mean	2.99E-05
SD	5.14E-04	95% KM (BCA) UCL	6.39E-04
95% KM (t) UCL	6.34E-04	95% KM (Percentile Bootstrap) UCL	6.33E-04
95% KM (z) UCL	6.34E-04	95% KM Bootstrap t UCL	6.63E-04
90% KM Chebyshev UCL	6.75E-04	95% KM Chebyshev UCL	7.15E-04
97.5% KM Chebyshev UCL	7.71E-04	99% KM Chebyshev UCL	8.82E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.47	Anderson-Darling GOF Test	
5% A-D Critical Value	0.743	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.151	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.231	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.925	k star (bias corrected MLE)	2.346
Theta hat (MLE)	8.03E-04	Theta star (bias corrected MLE)	1.00E-03
nu hat (MLE)	8.19E+01	nu star (bias corrected)	6.57E+01

MLE Mean (bias corrected)	2.35E-03	MLE Sd (bias corrected)	1.53E-03
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.30E+00	nu hat (KM)	938
Approximate Chi Square Value (937.96, α)	867.9	Adjusted Chi Square Value (937.96, β)	867.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.32E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	6.33E-04

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	9.50E-04	Mean	0.0097
Maximum	0.01	Median	0.01
SD	1.51E-03	CV	0.156
k hat (MLE)	15.34	k star (bias corrected MLE)	15.21
Theta hat (MLE)	6.33E-04	Theta star (bias corrected MLE)	6.38E-04
nu hat (MLE)	11103	nu star (bias corrected)	11012
MLE Mean (bias corrected)	0.0097	MLE Sd (bias corrected)	0.00249
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	10769	Adjusted Chi Square Value (N/A, β)	10768
95% Gamma Approximate UCL (use when $n \geq 50$)	9.92E-03	95% Gamma Adjusted UCL (use when $n < 50$)	9.92E-03

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.938	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.109	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.13E-04	Mean in Log Scale	-9.607
SD in Original Scale	5.64E-04	SD in Log Scale	1.49E+00
95% t UCL (assumes normality of ROS data)	2.62E-04	95% Percentile Bootstrap UCL	2.64E-04
95% BCA Bootstrap UCL	2.80E-04	95% Bootstrap t UCL	2.85E-04
95% H-UCL (Log ROS)	2.48E-04		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.536	95% H-UCL (KM -Log)	5.76E-04
KM SD (logged)	0.311	95% Critical H Value (KM-Log)	1.715
KM Standard Error of Mean (logged)	0.0185		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00103	Mean in Log Scale	-7.294
SD in Original Scale	0.00123	SD in Log Scale	0.788
95% t UCL (Assumes normality)	0.00113	95% H-Stat UCL	0.00101
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	6.34E-04	95% KM (Percentile Bootstrap) UCL	6.33E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***hexachlorocyclohexane (bhc), alpha-***319-84-6***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	31
Number of Detects	10	Number of Non-Detects	352
Number of Distinct Detects	10	Number of Distinct Non-Detects	24
Minimum Detect	7.10E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0176	Maximum Non-Detect	0.0066
Variance Detects	2.91E-05	Percent Non-Detects	97.24%
Mean Detects	3.30E-03	SD Detects	5.39E-03
Median Detects	0.00105	CV Detects	1.633
Skewness Detects	2.554	Kurtosis Detects	6.571
Mean of Logged Detects	-6.434	SD of Logged Detects	1.08

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.556	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.417	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.80E-04	Standard Error of Mean	5.36E-05
SD	9.67E-04	95% KM (BCA) UCL	6.72E-04
95% KM (t) UCL	6.69E-04	95% KM (Percentile Bootstrap) UCL	6.74E-04
95% KM (z) UCL	6.68E-04	95% KM Bootstrap t UCL	0.00126
90% KM Chebyshev UCL	7.41E-04	95% KM Chebyshev UCL	8.14E-04
97.5% KM Chebyshev UCL	9.15E-04	99% KM Chebyshev UCL	0.00111

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.57	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.362	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.275	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.821	k star (bias corrected MLE)	0.641
Theta hat (MLE)	4.02E-03	Theta star (bias corrected MLE)	5.15E-03
nu hat (MLE)	1.64E+01	nu star (bias corrected)	1.28E+01
MLE Mean (bias corrected)	3.30E-03	MLE Sd (bias corrected)	4.12E-03

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.36	nu hat (KM)	260.6
Approximate Chi Square Value (260.58, α)	224.2	Adjusted Chi Square Value (260.58, β)	224.1
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.74E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	6.75E-04

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.10E-04	Mean	0.00981
Maximum	0.0176	Median	0.01
SD	0.00139	CV	0.142
k hat (MLE)	15.87	k star (bias corrected MLE)	15.74
Theta hat (MLE)	6.19E-04	Theta star (bias corrected MLE)	6.24E-04
nu hat (MLE)	11489	nu star (bias corrected)	11395
MLE Mean (bias corrected)	0.00981	MLE Sd (bias corrected)	0.00247
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	11148	Adjusted Chi Square Value (N/A, β)	11147
95% Gamma Approximate UCL (use when $n \geq 50$)	1.00E-02	95% Gamma Adjusted UCL (use when $n < 50$)	1.00E-02

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.745	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.279	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.08E-04	Mean in Log Scale	-13.18
SD in Original Scale	1.01E-03	SD in Log Scale	2.75E+00
95% t UCL (assumes normality of ROS data)	1.95E-04	95% Percentile Bootstrap UCL	1.99E-04
95% BCA Bootstrap UCL	2.75E-04	95% Bootstrap t UCL	5.94E-04
95% H-UCL (Log ROS)	1.47E-04		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.565	95% H-UCL (KM -Log)	5.49E-04
KM SD (logged)	0.261	95% Critical H Value (KM-Log)	1.699
KM Standard Error of Mean (logged)	0.0148		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.26E-04	Mean in Log Scale	-7.677
SD in Original Scale	0.00123	SD in Log Scale	0.769
95% t UCL (Assumes normality)	8.32E-04	95% H-Stat UCL	6.74E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	6.72E-04		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***hexachlorocyclohexane (bhc), beta-***319-85-7***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	32
Number of Detects	20	Number of Non-Detects	342
Number of Distinct Detects	15	Number of Distinct Non-Detects	19
Minimum Detect	9.80E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.011	Maximum Non-Detect	0.01
Variance Detects	1.04E-05	Percent Non-Detects	94.48%
Mean Detects	3.17E-03	SD Detects	0.00323
Median Detects	0.002	CV Detects	1.016
Skewness Detects	1.907	Kurtosis Detects	2.383
Mean of Logged Detects	-6.089	SD of Logged Detects	0.767
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.653	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.905	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.308	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.198	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	6.64E-04	Standard Error of Mean	5.40E-05
SD	9.77E-04	95% KM (BCA) UCL	7.55E-04
95% KM (t) UCL	7.53E-04	95% KM (Percentile Bootstrap) UCL	7.53E-04
95% KM (z) UCL	7.53E-04	95% KM Bootstrap t UCL	8.07E-04
90% KM Chebyshev UCL	8.26E-04	95% KM Chebyshev UCL	8.99E-04
97.5% KM Chebyshev UCL	0.001	99% KM Chebyshev UCL	0.0012
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.653	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.224	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.197	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.634	k star (bias corrected MLE)	1.422
Theta hat (MLE)	1.94E-03	Theta star (bias corrected MLE)	2.23E-03
nu hat (MLE)	65.37	nu star (bias corrected)	5.69E+01
MLE Mean (bias corrected)	3.17E-03	MLE Sd (bias corrected)	2.66E-03
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.462	nu hat (KM)	334.2
Approximate Chi Square Value (334.17, α)	292.8	Adjusted Chi Square Value (334.17, β)	292.7
95% Gamma Approximate KM-UCL (use when n>=50)	7.58E-04	95% Gamma Adjusted KM-UCL (use when n<50)	7.58E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	9.80E-04	Mean	0.00962
Maximum	0.011	Median	0.01
SD	0.00173	CV	0.18
k hat (MLE)	11.65	k star (bias corrected MLE)	11.56
Theta hat (MLE)	8.26E-04	Theta star (bias corrected MLE)	8.33E-04
nu hat (MLE)	8434	nu star (bias corrected)	8366
MLE Mean (bias corrected)	0.00962	MLE Sd (bias corrected)	0.00283
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	8154	Adjusted Chi Square Value (N/A, β)	8153
95% Gamma Approximate UCL (use when n>=50)	9.87E-03	95% Gamma Adjusted UCL (use when n<50)	9.87E-03
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.852	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.905	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.198	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.81E-04	Mean in Log Scale	-9.9
SD in Original Scale	1.03E-03	SD in Log Scale	1.81E+00
95% t UCL (assumes normality of ROS data)	3.71E-04	95% Percentile Bootstrap UCL	3.78E-04
95% BCA Bootstrap UCL	4.06E-04	95% Bootstrap t UCL	4.30E-04
95% H-UCL (Log ROS)	3.40E-04		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.503	95% H-UCL (KM -Log)	6.22E-04
KM SD (logged)	0.409	95% Critical H Value (KM-Log)	1.753
KM Standard Error of Mean (logged)	0.0235		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00111	Mean in Log Scale	-7.254
SD in Original Scale	0.00147	SD in Log Scale	0.816
95% t UCL (Assumes normality)	0.00124	95% H-Stat UCL	0.00107
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	7.53E-04	95% KM (% Bootstrap) UCL	7.53E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (pesticides (ug/l)***hexachlorocyclohexane (bhc), delta-***319-86-8***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	62
Number of Detects	89	Number of Non-Detects	273
Number of Distinct Detects	54	Number of Distinct Non-Detects	16
Minimum Detect	3.60E-04	Minimum Non-Detect	3.60E-04
Maximum Detect	0.012	Maximum Non-Detect	0.0038
Variance Detects	3.07E-06	Percent Non-Detects	75.41%
Mean Detects	1.24E-03	SD Detects	1.75E-03
Median Detects	5.70E-04	CV Detects	1.412
Skewness Detects	3.939	Kurtosis Detects	18.5
Mean of Logged Detects	-7.125	SD of Logged Detects	0.794
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.524	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.308	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0939	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.92E-04	Standard Error of Mean	5.06E-05
SD	9.48E-04	95% KM (BCA) UCL	6.84E-04
95% KM (t) UCL	6.76E-04	95% KM (Percentile Bootstrap) UCL	6.77E-04
95% KM (z) UCL	6.75E-04	95% KM Bootstrap t UCL	7.08E-04
90% KM Chebyshev UCL	7.44E-04	95% KM Chebyshev UCL	8.13E-04
97.5% KM Chebyshev UCL	9.08E-04	99% KM Chebyshev UCL	0.0011
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.581	Anderson-Darling GOF Test	
5% A-D Critical Value	0.776	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.264	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0969	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.297	k star (bias corrected MLE)	1.261
Theta hat (MLE)	9.57E-04	Theta star (bias corrected MLE)	9.84E-04
nu hat (MLE)	2.31E+02	nu star (bias corrected)	2.24E+02
MLE Mean (bias corrected)	1.24E-03	MLE Sd (bias corrected)	1.11E-03
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.39	nu hat (KM)	282.4
Approximate Chi Square Value (282.40, α)	244.5	Adjusted Chi Square Value (282.40, β)	244.3
95% Gamma Approximate KM-UCL (use when n>=50)	6.84E-04	95% Gamma Adjusted KM-UCL (use when n<50)	6.84E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	3.60E-04	Mean	0.00785
Maximum	0.012	Median	0.01
SD	3.87E-03	CV	4.94E-01
k hat (MLE)	1.471	k star (bias corrected MLE)	1.461

Theta hat (MLE)	0.00533	Theta star (bias corrected MLE)	0.00537
nu hat (MLE)	1065	nu star (bias corrected)	1058
MLE Mean (bias corrected)	0.00785	MLE Sd (bias corrected)	0.00649
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	983	Adjusted Chi Square Value (N/A, β)	982.7
95% Gamma Approximate UCL (use when n>=50)	8.44E-03	95% Gamma Adjusted UCL (use when n<50)	8.44E-03

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.228 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0939 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.01E-04	Mean in Log Scale	-8.873
SD in Original Scale	9.97E-04	SD in Log Scale	1.399
95% t UCL (assumes normality of ROS data)	4.87E-04	95% Percentile Bootstrap UCL	4.91E-04
95% BCA Bootstrap UCL	5.18E-04	95% Bootstrap t UCL	5.28E-04
95% H-UCL (Log ROS)	4.47E-04		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	6.04E-04	Mean in Log Scale	-7.934
SD in Original Scale	0.00102	SD in Log Scale	0.876
95% t UCL (Assumes normality)	6.93E-04	95% H-Stat UCL	5.78E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	6.76E-04	95% KM (% Bootstrap) UCL	6.77E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***hexachlorocyclohexane (bhc), gamma- (lindane)***58-89-9***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	59
Number of Detects	48	Number of Non-Detects	314
Number of Distinct Detects	40	Number of Distinct Non-Detects	26
Minimum Detect	5.89E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.029	Maximum Non-Detect	0.008
Variance Detects	2.85E-05	Percent Non-Detects	86.74%
Mean Detects	3.96E-03	SD Detects	5.34E-03
Median Detects	0.0016	CV Detects	1.349
Skewness Detects	2.85	Kurtosis Detects	9.898
Mean of Logged Detects	-6.086	SD of Logged Detects	0.973

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.636 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.947 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.3 Lilliefors GOF Test
5% Lilliefors Critical Value	0.128 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.05E-03	Standard Error of Mean	1.25E-04
SD	0.00225	95% KM (BCA) UCL	0.00128
95% KM (t) UCL	1.25E-03	95% KM (Percentile Bootstrap) UCL	0.13%
95% KM (z) UCL	0.00125	95% KM Bootstrap t UCL	0.00134
90% KM Chebyshev UCL	0.00142	95% KM Chebyshev UCL	0.00159
97.5% KM Chebyshev UCL	0.00183	99% KM Chebyshev UCL	0.00229

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.149	Anderson-Darling GOF Test	
5% A-D Critical Value	0.778	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.225	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.132	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.037	k star (bias corrected MLE)	0.986
Theta hat (MLE)	0.00382	Theta star (bias corrected MLE)	4.01E-03
nu hat (MLE)	99.55	nu star (bias corrected)	94.66
MLE Mean (bias corrected)	0.00396	MLE Sd (bias corrected)	0.00399

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.217	nu hat (KM)	156.9
Approximate Chi Square Value (156.93, α)	129	Adjusted Chi Square Value (156.93, β)	128.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.00127	95% Gamma Adjusted KM-UCL (use when n<50)	0.00127
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	5.89E-04	Mean	0.0092
Maximum	0.029	Median	0.01
SD	0.00281	CV	0.306
k hat (MLE)	4.59	k star (bias corrected MLE)	4.554
Theta hat (MLE)	0.002	Theta star (bias corrected MLE)	0.00202
nu hat (MLE)	3323	nu star (bias corrected)	3297
MLE Mean (bias corrected)	0.0092	MLE Sd (bias corrected)	0.00431
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3164	Adjusted Chi Square Value (N/A, β)	3164
95% Gamma Approximate UCL (use when n>=50)	0.00958	95% Gamma Adjusted UCL (use when n<50)	0.00959
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.899	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.178	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.128	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6.87E-04	Mean in Log Scale	-8.926
SD in Original Scale	0.00232	SD in Log Scale	1.737
95% t UCL (assumes normality of ROS data)	8.89E-04	95% Percentile Bootstrap UCL	9.07E-04
95% BCA Bootstrap UCL	9.48E-04	95% Bootstrap t UCL	9.80E-04
95% H-UCL (Log ROS)	7.78E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00126	Mean in Log Scale	-7.288
SD in Original Scale	0.00238	SD in Log Scale	0.917
95% t UCL (Assumes normality)	0.00146	95% H-Stat UCL	0.00115
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00125	95% KM (% Bootstrap) UCL	0.00128
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (pesticides (ug/l)***mirex***2385-85-5***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	23
Number of Detects	9	Number of Non-Detects	353
Number of Distinct Detects	8	Number of Distinct Non-Detects	18
Minimum Detect	4.60E-04	Minimum Non-Detect	4.50E-04
Maximum Detect	0.0014	Maximum Non-Detect	0.0048
Variance Detects	9.03E-08	Percent Non-Detects	97.51%
Mean Detects	6.84E-04	SD Detects	3.00E-04
Median Detects	6.00E-04	CV Detects	0.439
Skewness Detects	1.941	Kurtosis Detects	4.335
Mean of Logged Detects	-7.354	SD of Logged Detects	0.369
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.757	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.252	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.57E-04	Standard Error of Mean	3.91E-06
SD	6.36E-05	95% KM (BCA) UCL	4.64E-04
95% KM (t) UCL	4.64E-04	95% KM (Percentile Bootstrap) UCL	4.64E-04
95% KM (z) UCL	4.64E-04	95% KM Bootstrap t UCL	4.71E-04

90% KM Chebyshev UCL	4.69E-04	95% KM Chebyshev UCL	4.74E-04
97.5% KM Chebyshev UCL	4.82E-04	99% KM Chebyshev UCL	4.96E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.658	Anderson-Darling GOF Test	
5% A-D Critical Value	0.722	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.217	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.28	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	7.565	k star (bias corrected MLE)	5.117
Theta hat (MLE)	9.05E-05	Theta star (bias corrected MLE)	1.34E-04
nu hat (MLE)	1.36E+02	nu star (bias corrected)	9.21E+01
MLE Mean (bias corrected)	6.84E-04	MLE Sd (bias corrected)	3.03E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	5.18E+01	nu hat (KM)	3.75E+04
Approximate Chi Square Value (N/A, α)	37024	Adjusted Chi Square Value (N/A, β)	37022
95% Gamma Approximate KM-UCL (use when n \geq 50)	4.63E-04	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	4.63E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	4.60E-04	Mean	0.00977
Maximum	0.01	Median	0.01
SD	1.45E-03	CV	1.49E-01
k hat (MLE)	11.3	k star (bias corrected MLE)	11.2
Theta hat (MLE)	8.65E-04	Theta star (bias corrected MLE)	8.72E-04
nu hat (MLE)	8178	nu star (bias corrected)	8111
MLE Mean (bias corrected)	0.00977	MLE Sd (bias corrected)	0.00292
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	7903	Adjusted Chi Square Value (N/A, β)	7902
95% Gamma Approximate UCL (use when n \geq 50)	1.00E-02	95% Gamma Adjusted UCL (use when n $<$ 50)	1.00E-02
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.209	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.00E-04	Mean in Log Scale	-9.685
SD in Original Scale	1.28E-04	SD in Log Scale	9.64E-01
95% t UCL (assumes normality of ROS data)	1.11E-04	95% Percentile Bootstrap UCL	1.11E-04
95% BCA Bootstrap UCL	1.13E-04	95% Bootstrap t UCL	1.14E-04
95% H-UCL (Log ROS)	1.10E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.695	95% H-UCL (KM -Log)	N/A
KM SD (logged)	0.0859	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.00531		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.86E-04	Mean in Log Scale	-7.99
SD in Original Scale	5.63E-04	SD in Log Scale	0.72
95% t UCL (Assumes normality)	5.35E-04	95% H-Stat UCL	4.72E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	4.64E-04	95% KM (Percentile Bootstrap) UCL	4.64E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (pesticides (ug/l)***nonachlor, cis-***5103-73-1***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	26
Number of Detects	29	Number of Non-Detects	333

Number of Distinct Detects	13	Number of Distinct Non-Detects	17
Minimum Detect	1.80E-04	Minimum Non-Detect	1.80E-04
Maximum Detect	4.60E-04	Maximum Non-Detect	0.0019
Variance Detects	3.35E-09	Percent Non-Detects	91.99%
Mean Detects	2.32E-04	SD Detects	5.79E-05
Median Detects	2.10E-04	CV Detects	0.25
Skewness Detects	2.475	Kurtosis Detects	8.022
Mean of Logged Detects	-8.392	SD of Logged Detects	0.209
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.752	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.184	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.86E-04	Standard Error of Mean	1.54E-06
SD	2.48E-05	95% KM (BCA) UCL	1.88E-04
95% KM (t) UCL	1.88E-04	95% KM (Percentile Bootstrap) UCL	1.88E-04
95% KM (z) UCL	1.88E-04	95% KM Bootstrap t UCL	1.89E-04
90% KM Chebyshev UCL	1.90E-04	95% KM Chebyshev UCL	1.92E-04
97.5% KM Chebyshev UCL	1.95E-04	99% KM Chebyshev UCL	2.01E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.347	Anderson-Darling GOF Test	
5% A-D Critical Value	0.744	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.174	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.162	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	21.41	k star (bias corrected MLE)	19.22
Theta hat (MLE)	1.08E-05	Theta star (bias corrected MLE)	1.21E-05
nu hat (MLE)	1.24E+03	nu star (bias corrected)	1.12E+03
MLE Mean (bias corrected)	2.32E-04	MLE Sd (bias corrected)	5.29E-05
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	5.63E+01	nu hat (KM)	4.08E+04
Approximate Chi Square Value (N/A, α)	40291	Adjusted Chi Square Value (N/A, β)	40289
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.88E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1.88E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.80E-04	Mean	0.00922
Maximum	0.01	Median	0.01
SD	2.66E-03	CV	2.88E-01
k hat (MLE)	2.407	k star (bias corrected MLE)	2.389
Theta hat (MLE)	3.83E-03	Theta star (bias corrected MLE)	3.86E-03
nu hat (MLE)	1743	nu star (bias corrected)	1730
MLE Mean (bias corrected)	0.00922	MLE Sd (bias corrected)	0.00596
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1634	Adjusted Chi Square Value (N/A, β)	1634
95% Gamma Approximate UCL (use when $n \geq 50$)	9.76E-03	95% Gamma Adjusted UCL (use when $n < 50$)	9.76E-03
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.857	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.174	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.07E-04	Mean in Log Scale	-9.251
SD in Original Scale	5.43E-05	SD in Log Scale	0.471
95% t UCL (assumes normality of ROS data)	1.12E-04	95% Percentile Bootstrap UCL	1.12E-04
95% BCA Bootstrap UCL	1.12E-04	95% Bootstrap t UCL	1.13E-04
95% H-UCL (Log ROS)	1.12E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.11E-04	Mean in Log Scale	-8.805
SD in Original Scale	2.20E-04	SD in Log Scale	0.737
95% t UCL (Assumes normality)	2.30E-04	95% H-Stat UCL	2.12E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (t) UCL1.88E-0495% KM (% Bootstrap) UCL1.88E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***nonachlor, trans-***39765-80-5***ug/l****)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	33
Number of Detects	10	Number of Non-Detects	352
Number of Distinct Detects	9	Number of Distinct Non-Detects	24
Minimum Detect	7.56E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0085	Maximum Non-Detect	0.007
Variance Detects	8.97E-06	Percent Non-Detects	97.24%
Mean Detects	3.08E-03	SD Detects	2.99E-03
Median Detects	0.0014	CV Detects	0.971
Skewness Detects	1.099	Kurtosis Detects	-0.709
Mean of Logged Detects	-6.18	SD of Logged Detects	0.908

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.736	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.341	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.76E-04	Standard Error of Mean	3.60E-05
SD	6.42E-04	95% KM (BCA) UCL	6.39E-04
95% KM (t) UCL	6.35E-04	95% KM (Percentile Bootstrap) UCL	6.42E-04
95% KM (z) UCL	6.35E-04	95% KM Bootstrap t UCL	6.67E-04
90% KM Chebyshev UCL	6.84E-04	95% KM Chebyshev UCL	7.33E-04
97.5% KM Chebyshev UCL	8.01E-04	99% KM Chebyshev UCL	9.34E-04

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.024	Anderson-Darling GOF Test	
5% A-D Critical Value	0.741	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.273	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.272	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.399	k star (bias corrected MLE)	1.046
Theta hat (MLE)	2.20E-03	Theta star (bias corrected MLE)	2.95E-03
nu hat (MLE)	2.80E+01	nu star (bias corrected)	2.09E+01
MLE Mean (bias corrected)	3.08E-03	MLE Sd (bias corrected)	3.01E-03

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	8.06E-01	nu hat (KM)	583.6
Approximate Chi Square Value (583.61, α)	528.6	Adjusted Chi Square Value (583.61, β)	528.4
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.36E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	6.36E-04

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.56E-04	Mean	0.00981
Maximum	0.01	Median	0.01
SD	0.00123	CV	0.125
k hat (MLE)	20.82	k star (bias corrected MLE)	20.65
Theta hat (MLE)	4.71E-04	Theta star (bias corrected MLE)	4.75E-04
nu hat (MLE)	15074	nu star (bias corrected)	14951
MLE Mean (bias corrected)	0.00981	MLE Sd (bias corrected)	0.00216
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	14667	Adjusted Chi Square Value (N/A, β)	14666
95% Gamma Approximate UCL (use when $n \geq 50$)	1.00E-02	95% Gamma Adjusted UCL (use when $n < 50$)	1.00E-02

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.836	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.226	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.18E-04	Mean in Log Scale	-11.95
SD in Original Scale	6.93E-04	SD in Log Scale	2.35E+00
95% t UCL (assumes normality of ROS data)	1.78E-04	95% Percentile Bootstrap UCL	1.83E-04
95% BCA Bootstrap UCL	2.05E-04	95% Bootstrap t UCL	2.63E-04
95% H-UCL (Log ROS)	1.56E-04		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.557	95% H-UCL (KM -Log)	5.58E-04
KM SD (logged)	0.282	95% Critical H Value (KM-Log)	1.706
KM Standard Error of Mean (logged)	0.0162		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.58E-04	Mean in Log Scale	-7.616
SD in Original Scale	0.00102	SD in Log Scale	0.776
95% t UCL (Assumes normality)	8.46E-04	95% H-Stat UCL	7.21E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	6.35E-04	95% KM (% Bootstrap) UCL	6.42E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***oxychlordane***27304-13-8***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	22
Number of Detects	8	Number of Non-Detects	354
Number of Distinct Detects	8	Number of Distinct Non-Detects	15
Minimum Detect	3.00E-04	Minimum Non-Detect	2.50E-04
Maximum Detect	0.0018	Maximum Non-Detect	0.0027
Variance Detects	2.58E-07	Percent Non-Detects	97.79%
Mean Detects	6.71E-04	SD Detects	5.08E-04
Median Detects	4.75E-04	CV Detects	0.756
Skewness Detects	1.875	Kurtosis Detects	3.768
Mean of Logged Detects	-7.503	SD of Logged Detects	0.635

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.768	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.232	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.61E-04	Standard Error of Mean	5.85E-06
SD	9.88E-05	95% KM (BCA) UCL	2.72E-04
95% KM (t) UCL	2.70E-04	95% KM (Percentile Bootstrap) UCL	2.70E-04
95% KM (z) UCL	2.70E-04	95% KM Bootstrap t UCL	2.80E-04
90% KM Chebyshev UCL	2.78E-04	95% KM Chebyshev UCL	2.86E-04
97.5% KM Chebyshev UCL	2.97E-04	99% KM Chebyshev UCL	3.19E-04

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.521	Anderson-Darling GOF Test	
5% A-D Critical Value	0.722	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.24	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.297	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.702	k star (bias corrected MLE)	1.772
Theta hat (MLE)	2.48E-04	Theta star (bias corrected MLE)	3.79E-04
nu hat (MLE)	4.32E+01	nu star (bias corrected)	2.84E+01
MLE Mean (bias corrected)	6.71E-04	MLE Sd (bias corrected)	5.04E-04

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	6.97E+00	nu hat (KM)	5.05E+03
Approximate Chi Square Value (N/A, α)	4885	Adjusted Chi Square Value (N/A, β)	4884
95% Gamma Approximate KM-UCL (use when n>=50)	2.70E-04	95% Gamma Adjusted KM-UCL (use when n<50)	2.70E-04

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	3.00E-04	Mean	0.00979
Maximum	0.01	Median	0.01
SD	1.38E-03	CV	1.40E-01
k hat (MLE)	11.74	k star (bias corrected MLE)	11.64
Theta hat (MLE)	8.34E-04	Theta star (bias corrected MLE)	8.41E-04
nu hat (MLE)	8498	nu star (bias corrected)	8429
MLE Mean (bias corrected)	0.00979	MLE Sd (bias corrected)	0.00287
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	8217	Adjusted Chi Square Value (N/A, β)	8216
95% Gamma Approximate UCL (use when n>=50)	1.00E-02	95% Gamma Adjusted UCL (use when n<50)	1.00E-02
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.221	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.59E-05	Mean in Log Scale	-11.78
SD in Original Scale	1.24E-04	SD in Log Scale	1.74E+00
95% t UCL (assumes normality of ROS data)	4.67E-05	95% Percentile Bootstrap UCL	4.76E-05
95% BCA Bootstrap UCL	5.15E-05	95% Bootstrap t UCL	5.43E-05
95% H-UCL (Log ROS)	4.50E-05		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.273	95% H-UCL (KM -Log)	2.62E-04
KM SD (logged)	0.156	95% Critical H Value (KM-Log)	1.671
KM Standard Error of Mean (logged)	0.00944		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.88E-04	Mean in Log Scale	-8.515
SD in Original Scale	3.27E-04	SD in Log Scale	0.735
95% t UCL (Assumes normality)	3.17E-04	95% H-Stat UCL	2.83E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	2.70E-04	95% KM (Percentile Bootstrap) UCL	2.70E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (pesticides (ug/l)***sum ddd***sum_ddd***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	83
Number of Detects	118	Number of Non-Detects	244
Number of Distinct Detects	70	Number of Distinct Non-Detects	20
Minimum Detect	1.50E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0151	Maximum Non-Detect	0.0067
Variance Detects	3.66E-06	Percent Non-Detects	67.40%
Mean Detects	9.58E-04	SD Detects	1.91E-03
Median Detects	3.80E-04	CV Detects	1.997
Skewness Detects	5.923	Kurtosis Detects	39.27
Mean of Logged Detects	-7.564	SD of Logged Detects	0.944
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.398	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.336	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0816	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.41E-04	Standard Error of Mean	6.20E-05
SD	0.00115	95% KM (BCA) UCL	6.53E-04
95% KM (t) UCL	6.44E-04	95% KM (Percentile Bootstrap) UCL	6.53E-04
95% KM (z) UCL	6.43E-04	95% KM Bootstrap t UCL	7.23E-04

90% KM Chebyshev UCL	7.27E-04	95% KM Chebyshev UCL	8.12E-04
97.5% KM Chebyshev UCL	9.29E-04	99% KM Chebyshev UCL	0.00116

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	7.261	Anderson-Darling GOF Test	
5% A-D Critical Value	0.786	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.2	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0875	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.947	k star (bias corrected MLE)	0.929
Theta hat (MLE)	0.00101	Theta star (bias corrected MLE)	1.03E-03
nu hat (MLE)	223.5	nu star (bias corrected)	219.1
MLE Mean (bias corrected)	9.58E-04	MLE Sd (bias corrected)	9.94E-04

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.223	nu hat (KM)	161.8
Approximate Chi Square Value (161.78, α)	133.4	Adjusted Chi Square Value (161.78, β)	133.3
95% Gamma Approximate KM-UCL (use when n>=50)	6.57E-04	95% Gamma Adjusted KM-UCL (use when n<50)	6.57E-04

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.50E-04	Mean	0.00705
Maximum	0.0151	Median	0.01
SD	4.38E-03	CV	6.21E-01
k hat (MLE)	0.944	k star (bias corrected MLE)	0.938
Theta hat (MLE)	0.00747	Theta star (bias corrected MLE)	0.00752
nu hat (MLE)	683.7	nu star (bias corrected)	679.4
MLE Mean (bias corrected)	0.00705	MLE Sd (bias corrected)	0.00728
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (679.41, α)	619.9	Adjusted Chi Square Value (679.41, β)	619.7
95% Gamma Approximate UCL (use when n>=50)	0.00773	95% Gamma Adjusted UCL (use when n<50)	0.00773

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.149	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0816	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	5.69E-04	Mean in Log Scale	-7.886
SD in Original Scale	0.00114	SD in Log Scale	0.763
95% t UCL (assumes normality of ROS data)	6.68E-04	95% Percentile Bootstrap UCL	6.67E-04
95% BCA Bootstrap UCL	7.22E-04	95% Bootstrap t UCL	7.99E-04
95% H-UCL (Log ROS)	5.44E-04		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8.38E-04	Mean in Log Scale	-7.568
SD in Original Scale	0.00131	SD in Log Scale	0.855
95% t UCL (Assumes normality)	9.52E-04	95% H-Stat UCL	8.15E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	6.44E-04	95% KM (% Bootstrap) UCL	6.53E-04
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***sum dde***sum_dde***ug/l***t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	53
Number of Detects	69	Number of Non-Detects	293
Number of Distinct Detects	32	Number of Distinct Non-Detects	21
Minimum Detect	1.40E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.022	Maximum Non-Detect	0.0079
Variance Detects	7.65E-06	Percent Non-Detects	80.94%
Mean Detects	8.82E-04	SD Detects	0.00277
Median Detects	2.20E-04	CV Detects	3.136
Skewness Detects	6.864	Kurtosis Detects	51.68

Mean of Logged Detects	-8.029	SD of Logged Detects	1.031
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.289	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.394	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.107	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.62E-04	Standard Error of Mean	6.67E-05
SD	0.00124	95% KM (BCA) UCL	5.05E-04
95% KM (t) UCL	4.72E-04	95% KM (Percentile Bootstrap) UCL	4.76E-04
95% KM (z) UCL	4.72E-04	95% KM Bootstrap t UCL	6.25E-04
90% KM Chebyshev UCL	5.62E-04	95% KM Chebyshev UCL	6.53E-04
97.5% KM Chebyshev UCL	7.79E-04	99% KM Chebyshev UCL	0.00103
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.95	Anderson-Darling GOF Test	
5% A-D Critical Value	0.805	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.374	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.113	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.618	k star (bias corrected MLE)	0.601
Theta hat (MLE)	1.43E-03	Theta star (bias corrected MLE)	1.47E-03
nu hat (MLE)	85.28	nu star (bias corrected)	82.91
MLE Mean (bias corrected)	8.82E-04	MLE Sd (bias corrected)	0.00114
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0858	nu hat (KM)	62.13
Approximate Chi Square Value (62.13, α)	45	Adjusted Chi Square Value (62.13, β)	44.94
95% Gamma Approximate KM-UCL (use when n>=50)	5.00E-04	95% Gamma Adjusted KM-UCL (use when n<50)	5.01E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.40E-04	Mean	0.00826
Maximum	0.022	Median	0.01
SD	0.00378	CV	0.458
k hat (MLE)	1.223	k star (bias corrected MLE)	1.214
Theta hat (MLE)	0.00676	Theta star (bias corrected MLE)	0.0068
nu hat (MLE)	885.3	nu star (bias corrected)	879.3
MLE Mean (bias corrected)	0.00826	MLE Sd (bias corrected)	0.0075
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (879.27, α)	811.5	Adjusted Chi Square Value (879.27, β)	811.2
95% Gamma Approximate UCL (use when n>=50)	0.00895	95% Gamma Adjusted UCL (use when n<50)	0.00896
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.3	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.107	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.09E-04	Mean in Log Scale	-8.254
SD in Original Scale	0.00123	SD in Log Scale	0.728
95% t UCL (assumes normality of ROS data)	5.16E-04	95% Percentile Bootstrap UCL	5.33E-04
95% BCA Bootstrap UCL	6.01E-04	95% Bootstrap t UCL	7.20E-04
95% H-UCL (Log ROS)	3.65E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8.33E-04	Mean in Log Scale	-7.608
SD in Original Scale	0.00148	SD in Log Scale	0.855
95% t UCL (Assumes normality)	9.61E-04	95% H-Stat UCL	7.83E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	5.05E-04		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***sum ddt (u = 0) (mdl)***sum_ddt_On_mdl***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 37
Number of Detects	22	Number of Non-Detects 340
Number of Distinct Detects	18	Number of Distinct Non-Detects 24
Minimum Detect	2.30E-04	Minimum Non-Detect 5.00E-04
Maximum Detect	0.0042	Maximum Non-Detect 0.0074
Variance Detects	1.30E-06	Percent Non-Detects 93.92%
Mean Detects	0.00147	SD Detects 0.00114
Median Detects	9.25E-04	CV Detects 0.775
Skewness Detects	1.154	Kurtosis Detects 0.415
Mean of Logged Detects	-6.82	SD of Logged Detects 0.828
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.84	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.251	Lilliefors GOF Test
5% Lilliefors Critical Value	0.189	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	3.28E-04	Standard Error of Mean 2.51E-05
SD	4.28E-04	95% KM (BCA) UCL 5.60E-04
95% KM (t) UCL	3.70E-04	95% KM (Percentile Bootstrap) UCL 3.95E-04
95% KM (z) UCL	3.69E-04	95% KM Bootstrap t UCL 3.85E-04
90% KM Chebyshev UCL	4.03E-04	95% KM Chebyshev UCL 4.37E-04
97.5% KM Chebyshev UCL	4.85E-04	99% KM Chebyshev UCL 5.78E-04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.809	Anderson-Darling GOF Test
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.183	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.188	Detected data appear Gamma Distributed at 5% Significance Level
Detected data follow Appr. Gamma Distribution at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.83E+00	k star (bias corrected MLE) 1.61E+00
Theta hat (MLE)	8.02E-04	Theta star (bias corrected MLE) 9.11E-04
nu hat (MLE)	8.06E+01	nu star (bias corrected) 7.09E+01
MLE Mean (bias corrected)	1.47E-03	MLE Sd (bias corrected) 1.16E-03
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.589	nu hat (KM) 426.2
Approximate Chi Square Value (426.23, α)	379.4	Adjusted Chi Square Value (426.23, β) 379.2
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	3.69E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$) 3.69E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2.30E-04	Mean 0.00948
Maximum	1.00E-02	Median 0.01
SD	0.00206	CV 0.217
k hat (MLE)	6.306	k star (bias corrected MLE) 6.255
Theta hat (MLE)	0.0015	Theta star (bias corrected MLE) 0.00152
nu hat (MLE)	4565	nu star (bias corrected) 4529
MLE Mean (bias corrected)	0.00948	MLE Sd (bias corrected) 0.00379
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	4.37E+03	Adjusted Chi Square Value (N/A, β) 4.37E+03
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00982	95% Gamma Adjusted UCL (use when $n < 50$) 0.00982
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.915	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.911	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.206	Lilliefors GOF Test
5% Lilliefors Critical Value	1.89E-01	Detected Data Not Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3.43E-04	Mean in Log Scale -8.38E+00
SD in Original Scale	4.39E-04	SD in Log Scale 0.854
95% t UCL (assumes normality of ROS data)	3.81E-04	95% Percentile Bootstrap UCL 3.82E-04
95% BCA Bootstrap UCL	3.91E-04	95% Bootstrap t UCL 3.90E-04
95% H-UCL (Log ROS)	3.62E-04	

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.224	95% H-UCL (KM -Log)	3.09E-04
KM SD (logged)	0.449	95% Critical H Value (KM-Log)	1.771
KM Standard Error of Mean (logged)	0.0324		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.76E-04	Mean in Log Scale	-7.559
SD in Original Scale	9.10E-04	SD in Log Scale	0.769
95% t UCL (Assumes normality)	8.55E-04	95% H-Stat UCL	7.59E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	3.70E-04	95% GROS Approximate Gamma UCL	9.82E-03
95% Approximate Gamma KM-UCL	3.69E-04		
Warning: Recommended UCL exceeds the maximum observation			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***total chlordane (km) (mdl)***tchlordane_km_mdl***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	79
Number of Detects	96	Number of Non-Detects	266
Number of Distinct Detects	63	Number of Distinct Non-Detects	21
Minimum Detect	1.80E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0232	Maximum Non-Detect	0.0098
Variance Detects	1.19E-05	Percent Non-Detects	73.48%
Mean Detects	0.00285	SD Detects	0.00346
Median Detects	0.0023	CV Detects	1.214
Skewness Detects	4.149	Kurtosis Detects	19.53
Mean of Logged Detects	-6.268	SD of Logged Detects	0.931

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.551	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.266	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0904	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00108	Standard Error of Mean	1.17E-04
SD	0.00212	95% KM (BCA) UCL	0.00129
95% KM (t) UCL	0.00127	95% KM (Percentile Bootstrap) UCL	0.00129
95% KM (z) UCL	0.00127	95% KM Bootstrap t UCL	0.00134
90% KM Chebyshev UCL	0.00143	95% KM Chebyshev UCL	0.00159
97.5% KM Chebyshev UCL	0.00181	99% KM Chebyshev UCL	0.00224

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.82	Anderson-Darling GOF Test	
5% A-D Critical Value	0.774	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.137	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0933	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.374	k star (bias corrected MLE)	1.338
Theta hat (MLE)	0.00207	Theta star (bias corrected MLE)	0.00213
nu hat (MLE)	263.8	nu star (bias corrected)	256.9
MLE Mean (bias corrected)	0.00285	MLE Sd (bias corrected)	0.00246

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.26	nu hat (KM)	188.3
Approximate Chi Square Value (188.30, α)	157.6	Adjusted Chi Square Value (188.30, β)	157.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.00129	95% Gamma Adjusted KM-UCL (use when n<50)	0.00129

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.80E-04	Mean	0.0081

Maximum	0.0232	Median	0.01
SD	0.00363	CV	0.447
k hat (MLE)	2.321	k star (bias corrected MLE)	2.304
Theta hat (MLE)	0.00349	Theta star (bias corrected MLE)	0.00352
nu hat (MLE)	1681	nu star (bias corrected)	1668
MLE Mean (bias corrected)	0.0081	MLE Sd (bias corrected)	0.00534
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1574	Adjusted Chi Square Value (N/A, β)	1574
95% Gamma Approximate UCL (use when n>=50)	0.00859	95% Gamma Adjusted UCL (use when n<50)	0.00859

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.135	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0904	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.13E-03	Mean in Log Scale	-7.46E+00
SD in Original Scale	0.00209	SD in Log Scale	1.118
95% t UCL (assumes normality of ROS data)	0.00131	95% Percentile Bootstrap UCL	0.00133
95% BCA Bootstrap UCL	0.00136	95% Bootstrap t UCL	0.00139
95% H-UCL (Log ROS)	0.00122		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00157	Mean in Log Scale	-6.992
SD in Original Scale	0.00223	SD in Log Scale	0.971
95% t UCL (Assumes normality)	0.00176	95% H-Stat UCL	0.00164
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	0.00127	95% KM (% Bootstrap) UCL	0.00129

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (pesticides (ug/l)***total ddx (km) (mdl)***tddt_km_mdl***ug/l****)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	108
Number of Detects	169	Number of Non-Detects	193
Number of Distinct Detects	95	Number of Distinct Non-Detects	18
Minimum Detect	1.40E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0247	Maximum Non-Detect	0.0079
Variance Detects	6.54E-06	Percent Non-Detects	53.31%
Mean Detects	0.00122	SD Detects	0.00256
Median Detects	4.00E-04	CV Detects	2.098
Skewness Detects	6.332	Kurtosis Detects	49.24
Mean of Logged Detects	-7.471	SD of Logged Detects	1.091

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.423	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.337	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0682	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.78E-04	Standard Error of Mean	9.76E-05
SD	0.00182	95% KM (BCA) UCL	9.61E-04
95% KM (t) UCL	9.39E-04	95% KM (Percentile Bootstrap) UCL	9.44E-04
95% KM (z) UCL	9.38E-04	95% KM Bootstrap t UCL	0.00102
90% KM Chebyshev UCL	0.00107	95% KM Chebyshev UCL	0.0012
97.5% KM Chebyshev UCL	0.00139	99% KM Chebyshev UCL	0.00175

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	10.23	Anderson-Darling GOF Test	
5% A-D Critical Value	0.794	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.193	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0744	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.782	k star (bias corrected MLE)	0.772
Theta hat (MLE)	0.00156	Theta star (bias corrected MLE)	0.00158

nu hat (MLE)	264.4	nu star (bias corrected)	261
MLE Mean (bias corrected)	0.00122	MLE Sd (bias corrected)	0.00139
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.183	nu hat (KM)	132.4
Approximate Chi Square Value (132.39, α)	106.8	Adjusted Chi Square Value (132.39, β)	106.7
95% Gamma Approximate KM-UCL (use when n>=50)	9.64E-04	95% Gamma Adjusted KM-UCL (use when n<50)	9.65E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.40E-04	Mean	0.0059
Maximum	0.0247	Median	0.01
SD	0.00472	CV	0.8
k hat (MLE)	0.74	k star (bias corrected MLE)	0.736
Theta hat (MLE)	0.00797	Theta star (bias corrected MLE)	0.00802
nu hat (MLE)	535.9	nu star (bias corrected)	532.8
MLE Mean (bias corrected)	0.0059	MLE Sd (bias corrected)	0.00688
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (532.78, α)	480.3	Adjusted Chi Square Value (532.78, β)	480.1
95% Gamma Approximate UCL (use when n>=50)	0.00655	95% Gamma Adjusted UCL (use when n<50)	0.00655
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.142	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0682	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.96E-04	Mean in Log Scale	-7.746
SD in Original Scale	0.0018	SD in Log Scale	0.937
95% t UCL (assumes normality of ROS data)	9.53E-04	95% Percentile Bootstrap UCL	9.59E-04
95% BCA Bootstrap UCL	0.00102	95% Bootstrap t UCL	0.00106
95% H-UCL (Log ROS)	7.44E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00112	Mean in Log Scale	-7.387
SD in Original Scale	0.00192	SD in Log Scale	0.98
95% t UCL (Assumes normality)	0.00128	95% H-Stat UCL	0.00112
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	9.61E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***1-methyldibenzothiophene***31317-07-4***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	145
Number of Detects	177	Number of Non-Detects	185
Number of Distinct Detects	140	Number of Distinct Non-Detects	16
Minimum Detect	0.00142	Minimum Non-Detect	0.00142
Maximum Detect	0.0133	Maximum Non-Detect	0.00162
Variance Detects	1.94E-06	Percent Non-Detects	51.10%
Mean Detects	0.00272	SD Detects	0.00139
Median Detects	0.00247	CV Detects	0.513
Skewness Detects	3.604	Kurtosis Detects	20.78
Mean of Logged Detects	-5.992	SD of Logged Detects	0.383
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.723	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.177	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0666	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00206	Standard Error of Mean	6.15E-05
SD	0.00117	95% KM (BCA) UCL	0.00215
95% KM (t) UCL	0.00216	95% KM (Percentile Bootstrap) UCL	0.00216

95% KM (z) UCL	0.00216	95% KM Bootstrap t UCL	0.00217
90% KM Chebyshev UCL	0.00224	95% KM Chebyshev UCL	0.00232
97.5% KM Chebyshev UCL	0.00244	99% KM Chebyshev UCL	0.00267
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.93	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.105	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0697	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.094	k star (bias corrected MLE)	5.994
Theta hat (MLE)	4.46E-04	Theta star (bias corrected MLE)	4.53E-04
nu hat (MLE)	2157	nu star (bias corrected)	2122
MLE Mean (bias corrected)	0.00272	MLE Sd (bias corrected)	0.00111
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.099	nu hat (KM)	2244
Approximate Chi Square Value (N/A, α)	2135	Adjusted Chi Square Value (N/A, β)	2134
95% Gamma Approximate KM-UCL (use when n>=50)	0.00216	95% Gamma Adjusted KM-UCL (use when n<50)	0.00216
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00142	Mean	0.00644
Maximum	0.0133	Median	0.01
SD	0.00377	CV	0.586
k hat (MLE)	2.252	k star (bias corrected MLE)	2.236
Theta hat (MLE)	0.00286	Theta star (bias corrected MLE)	0.00288
nu hat (MLE)	1631	nu star (bias corrected)	1619
MLE Mean (bias corrected)	0.00644	MLE Sd (bias corrected)	0.00431
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1526	Adjusted Chi Square Value (N/A, β)	1526
95% Gamma Approximate UCL (use when n>=50)	0.00683	95% Gamma Adjusted UCL (use when n<50)	0.00683
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0732	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0666	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00182	Mean in Log Scale	-6.507
SD in Original Scale	0.00133	SD in Log Scale	0.618
95% t UCL (assumes normality of ROS data)	0.00193	95% Percentile Bootstrap UCL	0.00194
95% BCA Bootstrap UCL	0.00194	95% Bootstrap t UCL	0.00195
95% H-UCL (Log ROS)	0.00192		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00171	Mean in Log Scale	-6.612
SD in Original Scale	0.00139	SD in Log Scale	0.663
95% t UCL (Assumes normality)	0.00183	95% H-Stat UCL	0.00179
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00216	95% KM (% Bootstrap) UCL	0.00216
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***1-methylnaphthalene***90-12-0***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	180
Number of Detects	193	Number of Non-Detects	169
Number of Distinct Detects	170	Number of Distinct Non-Detects	18
Minimum Detect	0.00165	Minimum Non-Detect	0.00162
Maximum Detect	0.11	Maximum Non-Detect	0.00212
Variance Detects	2.93E-04	Percent Non-Detects	46.69%
Mean Detects	0.012	SD Detects	0.0171
Median Detects	0.00509	CV Detects	1.431

Skewness Detects	3.097	Kurtosis Detects	11.44
Mean of Logged Detects	-5.061	SD of Logged Detects	1.06
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.62	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.273	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0638	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00714	Standard Error of Mean	7.11E-04
SD	0.0135	95% KM (BCA) UCL	0.00844
95% KM (t) UCL	0.00831	95% KM (Percentile Bootstrap) UCL	0.00833
95% KM (z) UCL	0.00831	95% KM Bootstrap t UCL	0.00858
90% KM Chebyshev UCL	0.00927	95% KM Chebyshev UCL	0.0102
97.5% KM Chebyshev UCL	0.0116	99% KM Chebyshev UCL	0.0142
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.675	Anderson-Darling GOF Test	
5% A-D Critical Value	0.788	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.17	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0676	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.918	k star (bias corrected MLE)	0.907
Theta hat (MLE)	0.013	Theta star (bias corrected MLE)	0.0132
nu hat (MLE)	354.4	nu star (bias corrected)	350.2
MLE Mean (bias corrected)	0.012	MLE Sd (bias corrected)	0.0126
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.28	nu hat (KM)	202.4
Approximate Chi Square Value (202.43, α)	170.5	Adjusted Chi Square Value (202.43, β)	170.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.00847	95% Gamma Adjusted KM-UCL (use when n<50)	0.00848
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00165	Mean	0.011
Maximum	0.11	Median	0.01
SD	0.0125	CV	1.134
k hat (MLE)	1.606	k star (bias corrected MLE)	1.594
Theta hat (MLE)	0.00688	Theta star (bias corrected MLE)	0.00693
nu hat (MLE)	1163	nu star (bias corrected)	1154
MLE Mean (bias corrected)	0.011	MLE Sd (bias corrected)	0.00875
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1076	Adjusted Chi Square Value (N/A, β)	1076
95% Gamma Approximate UCL (use when n>=50)	0.0118	95% Gamma Adjusted UCL (use when n<50)	0.0118
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.109	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0638	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00664	Mean in Log Scale	-6.32
SD in Original Scale	0.0137	SD in Log Scale	1.658
95% t UCL (assumes normality of ROS data)	0.00783	95% Percentile Bootstrap UCL	0.00787
95% BCA Bootstrap UCL	0.0081	95% Bootstrap t UCL	0.00805
95% H-UCL (Log ROS)	0.00903		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00678	Mean in Log Scale	-5.999
SD in Original Scale	0.0137	SD in Log Scale	1.267
95% t UCL (Assumes normality)	0.00796	95% H-Stat UCL	0.00648
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.0102		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***1-methylphenanthrene***832-69-9***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	95
Number of Detects	80	Number of Non-Detects	282
Number of Distinct Detects	75	Number of Distinct Non-Detects	22
Minimum Detect	0.00147	Minimum Non-Detect	0.0013
Maximum Detect	0.0465	Maximum Non-Detect	0.00404
Variance Detects	3.58E-05	Percent Non-Detects	77.90%
Mean Detects	0.0065	SD Detects	0.00598
Median Detects	0.0049	CV Detects	0.921
Skewness Detects	4.386	Kurtosis Detects	25.59
Mean of Logged Detects	-5.251	SD of Logged Detects	0.608
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.602	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.248	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0991	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00273	Standard Error of Mean	2.03E-04
SD	0.00348	95% KM (BCA) UCL	0.00306
95% KM (t) UCL	0.00307	95% KM (Percentile Bootstrap) UCL	0.00309
95% KM (z) UCL	0.00307	95% KM Bootstrap t UCL	0.00316
90% KM Chebyshev UCL	0.00334	95% KM Chebyshev UCL	0.00362
97.5% KM Chebyshev UCL	0.004	99% KM Chebyshev UCL	0.00475
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.158	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.177	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.101	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.477	k star (bias corrected MLE)	2.392
Theta hat (MLE)	0.00262	Theta star (bias corrected MLE)	0.00272
nu hat (MLE)	396.3	nu star (bias corrected)	382.7
MLE Mean (bias corrected)	0.0065	MLE Sd (bias corrected)	0.0042
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.615	nu hat (KM)	445.5
Approximate Chi Square Value (445.50, α)	397.6	Adjusted Chi Square Value (445.50, β)	397.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.00306	95% Gamma Adjusted KM-UCL (use when n<50)	0.00306
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00147	Mean	0.00923
Maximum	0.0465	Median	0.01
SD	0.00316	CV	0.342
k hat (MLE)	8.191	k star (bias corrected MLE)	8.125
Theta hat (MLE)	0.00113	Theta star (bias corrected MLE)	0.00114
nu hat (MLE)	5930	nu star (bias corrected)	5882
MLE Mean (bias corrected)	0.00923	MLE Sd (bias corrected)	0.00324
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	5705	Adjusted Chi Square Value (N/A, β)	5704
95% Gamma Approximate UCL (use when n>=50)	0.00951	95% Gamma Adjusted UCL (use when n<50)	0.00951
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.136	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0991	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00237	Mean in Log Scale	-6.589
SD in Original Scale	0.00363	SD in Log Scale	1.004
95% t UCL (assumes normality of ROS data)	0.00268	95% Percentile Bootstrap UCL	0.00271
95% BCA Bootstrap UCL	0.00278	95% Bootstrap t UCL	0.00279
95% H-UCL (Log ROS)	0.00255		
DL/2 Statistics			

DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.00281	Mean in Log Scale -6.109
SD in Original Scale	0.00343	SD in Log Scale 0.565
95% t UCL (Assumes normality)	0.00311	95% H-Stat UCL 0.00275
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	0.00307	95% KM (% Bootstrap) UCL 0.00309

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***2,3,5-trimethylnaphthalene (1,6,7-trimethylnaphthalene)***2245-38-7***ug

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 118
Number of Detects	106	Number of Non-Detects 256
Number of Distinct Detects	97	Number of Distinct Non-Detects 22
Minimum Detect	0.00191	Minimum Non-Detect 0.00154
Maximum Detect	0.0261	Maximum Non-Detect 0.00221
Variance Detects	2.34E-05	Percent Non-Detects 70.72%
Mean Detects	0.00629	SD Detects 0.00484
Median Detects	0.00446	CV Detects 0.769
Skewness Detects	2.114	Kurtosis Detects 4.735
Mean of Logged Detects	-5.278	SD of Logged Detects 0.613

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.751	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.234	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0861	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00294	Standard Error of Mean 1.79E-04
SD	0.00338	95% KM (BCA) UCL 0.00327
95% KM (t) UCL	0.00323	95% KM (Percentile Bootstrap) UCL 0.00326
95% KM (z) UCL	0.00323	95% KM Bootstrap t UCL 0.00327
90% KM Chebyshev UCL	0.00347	95% KM Chebyshev UCL 0.00371
97.5% KM Chebyshev UCL	0.00405	99% KM Chebyshev UCL 0.00471

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.269	Anderson-Darling GOF Test
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.174	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0888	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	2.542	k star (bias corrected MLE) 2.476
Theta hat (MLE)	0.00248	Theta star (bias corrected MLE) 0.00254
nu hat (MLE)	538.9	nu star (bias corrected) 525
MLE Mean (bias corrected)	0.00629	MLE Sd (bias corrected) 0.004

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.752	nu hat (KM) 544.6
Approximate Chi Square Value (544.57, α)	491.4	Adjusted Chi Square Value (544.57, β) 491.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.00325	95% Gamma Adjusted KM-UCL (use when n<50) 0.00325

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00191	Mean 0.00891
Maximum	0.0261	Median 0.01
SD	0.00311	CV 0.349
k hat (MLE)	6.257	k star (bias corrected MLE) 6.207
Theta hat (MLE)	0.00142	Theta star (bias corrected MLE) 0.00144
nu hat (MLE)	4530	nu star (bias corrected) 4494
MLE Mean (bias corrected)	0.00891	MLE Sd (bias corrected) 0.00358
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	4339	Adjusted Chi Square Value (N/A, β) 4339
95% Gamma Approximate UCL (use when n>=50)	0.00923	95% Gamma Adjusted UCL (use when n<50) 0.00923

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.129	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0861	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00246	Mean in Log Scale	-6.697
SD in Original Scale	0.00362	SD in Log Scale	1.163
95% t UCL (assumes normality of ROS data)	0.00278	95% Percentile Bootstrap UCL	0.00279
95% BCA Bootstrap UCL	0.00281	95% Bootstrap t UCL	0.00282
95% H-UCL (Log ROS)	0.00279		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00253	Mean in Log Scale	-6.449
SD in Original Scale	0.00356	SD in Log Scale	0.826
95% t UCL (Assumes normality)	0.00284	95% H-Stat UCL	0.00243
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00323	95% KM (% Bootstrap) UCL	0.00326
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***2,6-dimethylnaphthalene***581-42-0***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	164
Number of Detects	158	Number of Non-Detects	204
Number of Distinct Detects	149	Number of Distinct Non-Detects	18
Minimum Detect	0.00277	Minimum Non-Detect	0.00239
Maximum Detect	0.172	Maximum Non-Detect	0.00314
Variance Detects	4.48E-04	Percent Non-Detects	56.35%
Mean Detects	0.0165	SD Detects	0.0212
Median Detects	0.00947	CV Detects	1.282
Skewness Detects	3.907	Kurtosis Detects	20.89
Mean of Logged Detects	-4.555	SD of Logged Detects	0.89
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.615	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.258	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0705	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00858	Standard Error of Mean	8.23E-04
SD	0.0156	95% KM (BCA) UCL	0.0101
95% KM (t) UCL	0.00993	95% KM (Percentile Bootstrap) UCL	0.01
95% KM (z) UCL	0.00993	95% KM Bootstrap t UCL	0.0103
90% KM Chebyshev UCL	0.011	95% KM Chebyshev UCL	0.0122
97.5% KM Chebyshev UCL	0.0137	99% KM Chebyshev UCL	0.0168
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.537	Anderson-Darling GOF Test	
5% A-D Critical Value	0.777	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.112	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0763	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.248	k star (bias corrected MLE)	1.228
Theta hat (MLE)	0.0132	Theta star (bias corrected MLE)	0.0134
nu hat (MLE)	394.3	nu star (bias corrected)	388.2
MLE Mean (bias corrected)	0.0165	MLE Sd (bias corrected)	0.0149
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.302	nu hat (KM)	219
Approximate Chi Square Value (218.96, α)	185.7	Adjusted Chi Square Value (218.96, β)	185.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.0101	95% Gamma Adjusted KM-UCL (use when n<50)	0.0101
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00277	Mean	0.0128
Maximum	0.172	Median	0.01
SD	0.0143	CV	1.116
k hat (MLE)	2.343	k star (bias corrected MLE)	2.325
Theta hat (MLE)	0.00548	Theta star (bias corrected MLE)	0.00552
nu hat (MLE)	1696	nu star (bias corrected)	1683
MLE Mean (bias corrected)	0.0128	MLE Sd (bias corrected)	0.00842
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1589	Adjusted Chi Square Value (N/A, β)	1589
95% Gamma Approximate UCL (use when n>=50)	0.0136	95% Gamma Adjusted UCL (use when n<50)	0.0136
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0779	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0705	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00789	Mean in Log Scale	-5.943
SD in Original Scale	0.0159	SD in Log Scale	1.5
95% t UCL (assumes normality of ROS data)	0.00927	95% Percentile Bootstrap UCL	0.00941
95% BCA Bootstrap UCL	0.00962	95% Bootstrap t UCL	0.00962
95% H-UCL (Log ROS)	0.00991		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00802	Mean in Log Scale	-5.674
SD in Original Scale	0.0158	SD in Log Scale	1.148
95% t UCL (Assumes normality)	0.0094	95% H-Stat UCL	0.00761
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00993	95% KM (% Bootstrap) UCL	0.01
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***2-methylantracene***613-12-7***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	66
Number of Detects	45	Number of Non-Detects	317
Number of Distinct Detects	41	Number of Distinct Non-Detects	28
Minimum Detect	0.0013	Minimum Non-Detect	0.0012
Maximum Detect	0.0111	Maximum Non-Detect	0.00276
Variance Detects	4.23E-06	Percent Non-Detects	87.57%
Mean Detects	0.00366	SD Detects	0.00206
Median Detects	0.00305	CV Detects	0.562
Skewness Detects	1.782	Kurtosis Detects	3.578
Mean of Logged Detects	-5.734	SD of Logged Detects	0.492
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.828	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.945	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.209	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00166	Standard Error of Mean	8.01E-05
SD	0.00108	95% KM (BCA) UCL	0.00182
95% KM (t) UCL	0.00179	95% KM (Percentile Bootstrap) UCL	0.0018
95% KM (z) UCL	0.00179	95% KM Bootstrap t UCL	0.00181
90% KM Chebyshev UCL	0.0019	95% KM Chebyshev UCL	0.00201
97.5% KM Chebyshev UCL	0.00216	99% KM Chebyshev UCL	0.00246
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.005	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.139	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.132	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	4.161	k star (bias corrected MLE)	3.899
Theta hat (MLE)	8.80E-04	Theta star (bias corrected MLE)	9.40E-04
nu hat (MLE)	374.5	nu star (bias corrected)	350.9
MLE Mean (bias corrected)	0.00366	MLE Sd (bias corrected)	0.00186

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	2.365	nu hat (KM)	1712
Approximate Chi Square Value (N/A, α)	1617	Adjusted Chi Square Value (N/A, β)	1617
95% Gamma Approximate KM-UCL (use when n>=50)	0.00176	95% Gamma Adjusted KM-UCL (use when n<50)	0.00176

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0013	Mean	0.00921
Maximum	0.0111	Median	0.01
SD	0.00221	CV	0.24
k hat (MLE)	8.738	k star (bias corrected MLE)	8.668
Theta hat (MLE)	0.00105	Theta star (bias corrected MLE)	0.00106
nu hat (MLE)	6327	nu star (bias corrected)	6276
MLE Mean (bias corrected)	0.00921	MLE Sd (bias corrected)	0.00313
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	6092	Adjusted Chi Square Value (N/A, β)	6092
95% Gamma Approximate UCL (use when n>=50)	0.00949	95% Gamma Adjusted UCL (use when n<50)	0.00949

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.962	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.945	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.107	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data appear Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00125	Mean in Log Scale	-7.013
SD in Original Scale	0.00127	SD in Log Scale	0.787
95% t UCL (assumes normality of ROS data)	0.00136	95% Percentile Bootstrap UCL	0.00137
95% BCA Bootstrap UCL	0.00138	95% Bootstrap t UCL	0.00138
95% H-UCL (Log ROS)	0.00133		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-6.499	95% H-UCL (KM -Log)	0.00168
KM SD (logged)	0.382	95% Critical H Value (KM-Log)	1.742
KM Standard Error of Mean (logged)	0.0408		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00152	Mean in Log Scale	-6.597
SD in Original Scale	0.00109	SD in Log Scale	0.39
95% t UCL (Assumes normality)	0.00162	95% H-Stat UCL	0.00153

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.00179	95% KM (% Bootstrap) UCL	0.0018
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l))***2-methyldibenzothiophene & 3-methyldibenzothiophene***mdbzthphn2_3*

General Statistics

Total Number of Observations	362	Number of Distinct Observations	58
Number of Detects	43	Number of Non-Detects	319
Number of Distinct Detects	40	Number of Distinct Non-Detects	19
Minimum Detect	0.00161	Minimum Non-Detect	0.00142
Maximum Detect	0.112	Maximum Non-Detect	0.00166
Variance Detects	5.30E-04	Percent Non-Detects	88.12%
Mean Detects	0.00825	SD Detects	0.023
Median Detects	0.00245	CV Detects	2.79
Skewness Detects	4.361	Kurtosis Detects	18.15
Mean of Logged Detects	-5.72	SD of Logged Detects	0.922

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.292	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.446	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.135	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00223	Standard Error of Mean	4.33E-04
SD	0.00815	95% KM (BCA) UCL	0.00305
95% KM (t) UCL	0.00295	95% KM (Percentile Bootstrap) UCL	0.00306
95% KM (z) UCL	0.00294	95% KM Bootstrap t UCL	0.00717
90% KM Chebyshev UCL	0.00353	95% KM Chebyshev UCL	0.00412
97.5% KM Chebyshev UCL	0.00494	99% KM Chebyshev UCL	0.00654
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	9.225	Anderson-Darling GOF Test	
5% A-D Critical Value	0.798	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.382	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.141	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.66	k star (bias corrected MLE)	0.63
Theta hat (MLE)	0.0125	Theta star (bias corrected MLE)	0.0131
nu hat (MLE)	56.78	nu star (bias corrected)	54.15
MLE Mean (bias corrected)	0.00825	MLE Sd (bias corrected)	0.0104
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.075	nu hat (KM)	54.29
Approximate Chi Square Value (54.29, α)	38.36	Adjusted Chi Square Value (54.29, β)	38.31
95% Gamma Approximate KM-UCL (use when n>=50)	0.00316	95% Gamma Adjusted KM-UCL (use when n<50)	0.00316
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00161	Mean	0.00979
Maximum	0.112	Median	0.01
SD	0.00788	CV	0.804
k hat (MLE)	4.646	k star (bias corrected MLE)	4.609
Theta hat (MLE)	0.00211	Theta star (bias corrected MLE)	0.00212
nu hat (MLE)	3364	nu star (bias corrected)	3337
MLE Mean (bias corrected)	0.00979	MLE Sd (bias corrected)	0.00456
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3204	Adjusted Chi Square Value (N/A, β)	3204
95% Gamma Approximate UCL (use when n>=50)	0.0102	95% Gamma Adjusted UCL (use when n<50)	0.0102
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.64	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.248	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.135	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00113	Mean in Log Scale	-9.198
SD in Original Scale	0.00828	SD in Log Scale	1.984
95% t UCL (assumes normality of ROS data)	0.00184	95% Percentile Bootstrap UCL	0.00192
95% BCA Bootstrap UCL	0.00238	95% Bootstrap t UCL	0.00518
95% H-UCL (Log ROS)	1.00E-03		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00164	Mean in Log Scale	-7.027
SD in Original Scale	0.00822	SD in Log Scale	0.575
95% t UCL (Assumes normality)	0.00235	95% H-Stat UCL	0.00111
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00295	95% KM (% Bootstrap) UCL	0.00306

Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***2-methylnaphthalene***91-57-6***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	217
Number of Detects	257	Number of Non-Detects	105
Number of Distinct Detects	204	Number of Distinct Non-Detects	19
Minimum Detect	0.00134	Minimum Non-Detect	0.00133
Maximum Detect	0.129	Maximum Non-Detect	0.0025
Variance Detects	2.39E-04	Percent Non-Detects	29.01%
Mean Detects	0.00862	SD Detects	0.0155
Median Detects	0.00364	CV Detects	1.793
Skewness Detects	5.157	Kurtosis Detects	32.44
Mean of Logged Detects	-5.352	SD of Logged Detects	0.937
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.46	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.319	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0553	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00651	Standard Error of Mean	7.06E-04
SD	0.0134	95% KM (BCA) UCL	0.00775
95% KM (t) UCL	0.00768	95% KM (Percentile Bootstrap) UCL	0.00769
95% KM (z) UCL	0.00767	95% KM Bootstrap t UCL	0.008
90% KM Chebyshev UCL	0.00863	95% KM Chebyshev UCL	0.00959
97.5% KM Chebyshev UCL	0.0109	99% KM Chebyshev UCL	0.0135
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	17.8	Anderson-Darling GOF Test	
5% A-D Critical Value	0.786	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.196	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0588	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.968	k star (bias corrected MLE)	0.959
Theta hat (MLE)	0.0089	Theta star (bias corrected MLE)	0.00898
nu hat (MLE)	497.6	nu star (bias corrected)	493.1
MLE Mean (bias corrected)	0.00862	MLE Sd (bias corrected)	0.0088
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.236	nu hat (KM)	170.8
Approximate Chi Square Value (170.80, α)	141.6	Adjusted Chi Square Value (170.80, β)	141.5
95% Gamma Approximate KM-UCL (use when n>=50)	0.00786	95% Gamma Adjusted KM-UCL (use when n<50)	0.00786
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00134	Mean	0.00902
Maximum	0.129	Median	0.00636
SD	0.013	CV	1.444
k hat (MLE)	1.312	k star (bias corrected MLE)	1.303
Theta hat (MLE)	0.00687	Theta star (bias corrected MLE)	0.00692
nu hat (MLE)	949.8	nu star (bias corrected)	943.3
MLE Mean (bias corrected)	0.00902	MLE Sd (bias corrected)	0.0079
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (943.31, α)	873	Adjusted Chi Square Value (943.31, β)	872.8
95% Gamma Approximate UCL (use when n>=50)	0.00975	95% Gamma Adjusted UCL (use when n<50)	0.00975
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.129	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0553	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00631	Mean in Log Scale	-5.962
SD in Original Scale	0.0135	SD in Log Scale	1.271
95% t UCL (assumes normality of ROS data)	0.00748	95% Percentile Bootstrap UCL	0.00753
95% BCA Bootstrap UCL	0.00781	95% Bootstrap t UCL	0.00785
95% H-UCL (Log ROS)	0.00676		

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.00633	Mean in Log Scale -5.896
SD in Original Scale	0.0135	SD in Log Scale 1.164
95% t UCL (Assumes normality)	0.0075	95% H-Stat UCL 0.00622
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.00775

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***2-methylphenanthrene & 4-methylphenanthrene***mphnanthrn2_4***ug/l

General Statistics		
Total Number of Observations	82	Number of Distinct Observations 49
Number of Detects	37	Number of Non-Detects 45
Number of Distinct Detects	37	Number of Distinct Non-Detects 12
Minimum Detect	0.00272	Minimum Non-Detect 0.00238
Maximum Detect	0.0226	Maximum Non-Detect 0.00276
Variance Detects	1.72E-05	Percent Non-Detects 54.88%
Mean Detects	0.00555	SD Detects 0.00415
Median Detects	0.00425	CV Detects 0.748
Skewness Detects	3.367	Kurtosis Detects 11.65
Mean of Logged Detects	-5.333	SD of Logged Detects 0.462

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.553 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.936 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.284 Lilliefors GOF Test
5% Lilliefors Critical Value	0.146 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00381	Standard Error of Mean 3.55E-04
SD	0.00317	95% KM (BCA) UCL 0.00447
95% KM (t) UCL	0.0044	95% KM (Percentile Bootstrap) UCL 0.00441
95% KM (z) UCL	0.0044	95% KM Bootstrap t UCL 0.00484
90% KM Chebyshev UCL	0.00488	95% KM Chebyshev UCL 0.00536
97.5% KM Chebyshev UCL	0.00603	99% KM Chebyshev UCL 0.00734

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	2.973 Anderson-Darling GOF Test
5% A-D Critical Value	0.753 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.21 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.146 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only		
k hat (MLE)	3.751	k star (bias corrected MLE) 3.465
Theta hat (MLE)	0.00148	Theta star (bias corrected MLE) 0.0016
nu hat (MLE)	277.6	nu star (bias corrected) 256.4
MLE Mean (bias corrected)	0.00555	MLE Sd (bias corrected) 0.00298

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.444	nu hat (KM) 236.8
Approximate Chi Square Value (236.85, α)	202.2	Adjusted Chi Square Value (236.85, β) 201.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00446	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.00448

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00272	Mean 0.00799
Maximum	0.0226	Median 0.01
SD	0.00355	CV 0.444
k hat (MLE)	4.954	k star (bias corrected MLE) 4.781
Theta hat (MLE)	0.00161	Theta star (bias corrected MLE) 0.00167
nu hat (MLE)	812.5	nu star (bias corrected) 784.1
MLE Mean (bias corrected)	0.00799	MLE Sd (bias corrected) 0.00366
		Adjusted Level of Significance (β) 0.0471
Approximate Chi Square Value (784.13, α)	720.1	Adjusted Chi Square Value (784.13, β) 719.1

95% Gamma Approximate UCL (use when n>=50)	0.0087	95% Gamma Adjusted UCL (use when n<50)	0.00872
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.82	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.936	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.146	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00332	Mean in Log Scale	-6.009
SD in Original Scale	0.00345	SD in Log Scale	0.734
95% t UCL (assumes normality of ROS data)	0.00396	95% Percentile Bootstrap UCL	0.004
95% BCA Bootstrap UCL	0.00419	95% Bootstrap t UCL	0.00432
95% H-UCL (Log ROS)	0.00379		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00319	Mean in Log Scale	-6.075
SD in Original Scale	0.00351	SD in Log Scale	0.744
95% t UCL (Assumes normality)	0.00384	95% H-Stat UCL	0.00359
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0044	95% KM (% Bootstrap) UCL	0.00441
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***2-methylphenanthrene***2531-84-2***ug/l***t)			
General Statistics			
Total Number of Observations	280	Number of Distinct Observations	96
Number of Detects	82	Number of Non-Detects	198
Number of Distinct Detects	78	Number of Distinct Non-Detects	18
Minimum Detect	0.00153	Minimum Non-Detect	0.00122
Maximum Detect	0.0668	Maximum Non-Detect	0.00267
Variance Detects	1.12E-04	Percent Non-Detects	70.71%
Mean Detects	0.00777	SD Detects	0.0106
Median Detects	0.00461	CV Detects	1.36
Skewness Detects	4.019	Kurtosis Detects	17.81
Mean of Logged Detects	-5.226	SD of Logged Detects	0.725
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.5	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.298	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0978	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00328	Standard Error of Mean	3.90E-04
SD	0.00639	95% KM (BCA) UCL	0.004
95% KM (t) UCL	0.00392	95% KM (Percentile Bootstrap) UCL	0.00399
95% KM (z) UCL	0.00392	95% KM Bootstrap t UCL	0.00417
90% KM Chebyshev UCL	0.00445	95% KM Chebyshev UCL	0.00498
97.5% KM Chebyshev UCL	0.00571	99% KM Chebyshev UCL	0.00715
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.501	Anderson-Darling GOF Test	
5% A-D Critical Value	0.771	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.216	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.1	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.499	k star (bias corrected MLE)	1.453
Theta hat (MLE)	0.00519	Theta star (bias corrected MLE)	0.00535
nu hat (MLE)	245.9	nu star (bias corrected)	238.2
MLE Mean (bias corrected)	0.00777	MLE Sd (bias corrected)	0.00645
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.263	nu hat (KM)	147.3
Approximate Chi Square Value (147.33, α)	120.3	Adjusted Chi Square Value (147.33, β)	120.2

95% Gamma Approximate KM-UCL (use when n>=50)	0.00401	95% Gamma Adjusted KM-UCL (use when n<50)	0.00402
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00153	Mean	0.00935
Maximum	0.0668	Median	0.01
SD	0.00579	CV	0.619
k hat (MLE)	4.529	k star (bias corrected MLE)	4.483
Theta hat (MLE)	0.00206	Theta star (bias corrected MLE)	0.00209
nu hat (MLE)	2536	nu star (bias corrected)	2510
MLE Mean (bias corrected)	0.00935	MLE Sd (bias corrected)	0.00442
		Adjusted Level of Significance (β)	0.0491
Approximate Chi Square Value (N/A, α)	2395	Adjusted Chi Square Value (N/A, β)	2394
95% Gamma Approximate UCL (use when n>=50)	0.0098	95% Gamma Adjusted UCL (use when n<50)	0.0098
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.153	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0978	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00282	Mean in Log Scale	-6.819
SD in Original Scale	0.00655	SD in Log Scale	1.316
95% t UCL (assumes normality of ROS data)	0.00347	95% Percentile Bootstrap UCL	0.00351
95% BCA Bootstrap UCL	0.00366	95% Bootstrap t UCL	0.00374
95% H-UCL (Log ROS)	0.00314		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00313	Mean in Log Scale	-6.29
SD in Original Scale	0.00644	SD in Log Scale	0.801
95% t UCL (Assumes normality)	0.00376	95% H-Stat UCL	0.00281
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00392	95% KM (% Bootstrap) UCL	0.00399
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***4-methyldibenzothiophene***7372-88-5***ug/l****)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	175
Number of Detects	205	Number of Non-Detects	157
Number of Distinct Detects	165	Number of Distinct Non-Detects	16
Minimum Detect	0.00146	Minimum Non-Detect	0.00142
Maximum Detect	0.0211	Maximum Non-Detect	0.00162
Variance Detects	6.60E-06	Percent Non-Detects	43.37%
Mean Detects	0.00363	SD Detects	0.00257
Median Detects	0.00272	CV Detects	0.707
Skewness Detects	3.362	Kurtosis Detects	16.83
Mean of Logged Detects	-5.774	SD of Logged Detects	0.521
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.705	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.199	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0619	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00267	Standard Error of Mean	1.17E-04
SD	0.00222	95% KM (BCA) UCL	0.00287
95% KM (t) UCL	0.00287	95% KM (Percentile Bootstrap) UCL	0.00288
95% KM (z) UCL	0.00287	95% KM Bootstrap t UCL	0.00291
90% KM Chebyshev UCL	0.00303	95% KM Chebyshev UCL	0.00318
97.5% KM Chebyshev UCL	0.0034	99% KM Chebyshev UCL	0.00384
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.227	Anderson-Darling GOF Test	

5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.137	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0634	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.354	k star (bias corrected MLE)	3.308
Theta hat (MLE)	0.00108	Theta star (bias corrected MLE)	0.0011
nu hat (MLE)	1375	nu star (bias corrected)	1356
MLE Mean (bias corrected)	0.00363	MLE Sd (bias corrected)	0.002
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.454	nu hat (KM)	1052
Approximate Chi Square Value (N/A, α)	978	Adjusted Chi Square Value (N/A, β)	977.8
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00288	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00288
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00146	Mean	0.00639
Maximum	0.0211	Median	0.00605
SD	0.0037	CV	0.579
k hat (MLE)	2.482	k star (bias corrected MLE)	2.463
Theta hat (MLE)	0.00258	Theta star (bias corrected MLE)	0.0026
nu hat (MLE)	1797	nu star (bias corrected)	1783
MLE Mean (bias corrected)	0.00639	MLE Sd (bias corrected)	0.00407
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1686	Adjusted Chi Square Value (N/A, β)	1686
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00676	95% Gamma Adjusted UCL (use when $n < 50$)	0.00676
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.11	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0619	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00245	Mean in Log Scale	-6.338
SD in Original Scale	0.00237	SD in Log Scale	0.799
95% t UCL (assumes normality of ROS data)	0.00266	95% Percentile Bootstrap UCL	0.00266
95% BCA Bootstrap UCL	0.00268	95% Bootstrap t UCL	0.00269
95% H-UCL (Log ROS)	0.00264		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00238	Mean in Log Scale	-6.395
SD in Original Scale	0.00241	SD in Log Scale	0.811
95% t UCL (Assumes normality)	0.00259	95% H-Stat UCL	0.00253
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00287	95% KM (% Bootstrap) UCL	0.00288
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***4-methylphenanthrene & 9-methylphenanthrene***mphnnanthr4_9***ug/l			
General Statistics			
Total Number of Observations	280	Number of Distinct Observations	129
Number of Detects	136	Number of Non-Detects	144
Number of Distinct Detects	115	Number of Distinct Non-Detects	17
Minimum Detect	0.00179	Minimum Non-Detect	0.00122
Maximum Detect	0.039	Maximum Non-Detect	0.00267
Variance Detects	2.32E-05	Percent Non-Detects	51.43%
Mean Detects	0.00567	SD Detects	0.00482
Median Detects	0.00397	CV Detects	0.85
Skewness Detects	3.584	Kurtosis Detects	18.16
Mean of Logged Detects	-5.368	SD of Logged Detects	0.56
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.638	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	

Lilliefors Test Statistic	0.273	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.076	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0035	Standard Error of Mean	2.45E-04
SD	0.00396	95% KM (BCA) UCL	0.00392
95% KM (t) UCL	0.00391	95% KM (Percentile Bootstrap) UCL	0.00391
95% KM (z) UCL	0.00391	95% KM Bootstrap t UCL	0.00399
90% KM Chebyshev UCL	0.00424	95% KM Chebyshev UCL	0.00457
97.5% KM Chebyshev UCL	0.00503	99% KM Chebyshev UCL	0.00594
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.617	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.212	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0809	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.709	k star (bias corrected MLE)	2.654
Theta hat (MLE)	0.00209	Theta star (bias corrected MLE)	0.00214
nu hat (MLE)	736.8	nu star (bias corrected)	721.9
MLE Mean (bias corrected)	0.00567	MLE Sd (bias corrected)	0.00348
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.781	nu hat (KM)	437.6
Approximate Chi Square Value (437.59, α)	390.1	Adjusted Chi Square Value (437.59, β)	389.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.00393	95% Gamma Adjusted KM-UCL (use when n<50)	0.00393
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00179	Mean	0.0079
Maximum	0.039	Median	0.01
SD	0.00399	CV	0.505
k hat (MLE)	3.875	k star (bias corrected MLE)	3.836
Theta hat (MLE)	0.00204	Theta star (bias corrected MLE)	0.00206
nu hat (MLE)	2170	nu star (bias corrected)	2148
MLE Mean (bias corrected)	0.0079	MLE Sd (bias corrected)	0.00403
		Adjusted Level of Significance (β)	0.0491
Approximate Chi Square Value (N/A, α)	2041	Adjusted Chi Square Value (N/A, β)	2041
95% Gamma Approximate UCL (use when n>=50)	0.00831	95% Gamma Adjusted UCL (use when n<50)	0.00831
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.162	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.076	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00338	Mean in Log Scale	-6.115
SD in Original Scale	0.00404	SD in Log Scale	0.891
95% t UCL (assumes normality of ROS data)	0.00377	95% Percentile Bootstrap UCL	0.00379
95% BCA Bootstrap UCL	0.00383	95% Bootstrap t UCL	0.00388
95% H-UCL (Log ROS)	0.00367		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00337	Mean in Log Scale	-6.07
SD in Original Scale	0.00403	SD in Log Scale	0.794
95% t UCL (Assumes normality)	0.00377	95% H-Stat UCL	0.00348
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00391	95% KM (% Bootstrap) UCL	0.00391

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***9-methylphenanthrene***883-20-5***ug/l***t)

General Statistics

Total Number of Observations	82	Number of Distinct Observations	62
Number of Detects	56	Number of Non-Detects	26
Number of Distinct Detects	54	Number of Distinct Non-Detects	8
Minimum Detect	0.00255	Minimum Non-Detect	0.00238
Maximum Detect	0.0326	Maximum Non-Detect	0.00256
Variance Detects	2.05E-05	Percent Non-Detects	31.71%
Mean Detects	0.00584	SD Detects	0.00452
Median Detects	0.00488	CV Detects	0.774
Skewness Detects	4.398	Kurtosis Detects	23.49
Mean of Logged Detects	-5.285	SD of Logged Detects	0.475
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.565	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.266	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00475	Standard Error of Mean	4.50E-04
SD	0.00404	95% KM (BCA) UCL	0.00553
95% KM (t) UCL	0.00549	95% KM (Percentile Bootstrap) UCL	0.00556
95% KM (z) UCL	0.00549	95% KM Bootstrap t UCL	0.00613
90% KM Chebyshev UCL	0.0061	95% KM Chebyshev UCL	0.00671
97.5% KM Chebyshev UCL	0.00756	99% KM Chebyshev UCL	0.00922
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.165	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.161	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.12	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.662	k star (bias corrected MLE)	3.478
Theta hat (MLE)	0.0016	Theta star (bias corrected MLE)	0.00168
nu hat (MLE)	410.2	nu star (bias corrected)	389.5
MLE Mean (bias corrected)	0.00584	MLE Sd (bias corrected)	0.00313
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.38	nu hat (KM)	226.3
Approximate Chi Square Value (226.33, α)	192.5	Adjusted Chi Square Value (226.33, β)	192
95% Gamma Approximate KM-UCL (use when n>=50)	0.00558	95% Gamma Adjusted KM-UCL (use when n<50)	0.00559
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00255	Mean	0.00716
Maximum	0.0326	Median	0.00645
SD	0.0042	CV	0.587
k hat (MLE)	3.991	k star (bias corrected MLE)	3.853
Theta hat (MLE)	0.00179	Theta star (bias corrected MLE)	0.00186
nu hat (MLE)	654.5	nu star (bias corrected)	631.9
MLE Mean (bias corrected)	0.00716	MLE Sd (bias corrected)	0.00365
		Adjusted Level of Significance (β)	0.0471
Approximate Chi Square Value (631.87, α)	574.6	Adjusted Chi Square Value (631.87, β)	573.6
95% Gamma Approximate UCL (use when n>=50)	0.00788	95% Gamma Adjusted UCL (use when n<50)	0.00789
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00455	Mean in Log Scale	-5.629
SD in Original Scale	0.00419	SD in Log Scale	0.653
95% t UCL (assumes normality of ROS data)	0.00532	95% Percentile Bootstrap UCL	0.00538
95% BCA Bootstrap UCL	0.00564	95% Bootstrap t UCL	0.00571
95% H-UCL (Log ROS)	0.00512		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.525	95% H-UCL (KM -Log)	0.0051
KM SD (logged)	0.524	95% Critical H Value (KM-Log)	1.857
KM Standard Error of Mean (logged)	0.0584		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	

Mean in Original Scale	0.00438	Mean in Log Scale	-5.734
SD in Original Scale	0.00431	SD in Log Scale	0.769
95% t UCL (Assumes normality)	0.00517	95% H-Stat UCL	0.00518
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.00553

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***acenaphthene***83-32-9***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	283
Number of Detects	308	Number of Non-Detects	54
Number of Distinct Detects	272	Number of Distinct Non-Detects	14
Minimum Detect	0.00138	Minimum Non-Detect	0.00134
Maximum Detect	0.211	Maximum Non-Detect	0.00151
Variance Detects	0.00129	Percent Non-Detects	14.92%
Mean Detects	0.031	SD Detects	0.0359
Median Detects	0.0178	CV Detects	1.155
Skewness Detects	2.083	Kurtosis Detects	5.41
Mean of Logged Detects	-4.138	SD of Logged Detects	1.237

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.763	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0505	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0266	Standard Error of Mean	0.00183
SD	0.0347	95% KM (BCA) UCL	0.0298
95% KM (t) UCL	0.0296	95% KM (Percentile Bootstrap) UCL	0.0296
95% KM (z) UCL	0.0296	95% KM Bootstrap t UCL	0.0299
90% KM Chebyshev UCL	0.0321	95% KM Chebyshev UCL	0.0346
97.5% KM Chebyshev UCL	0.038	99% KM Chebyshev UCL	0.0448

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.298	Anderson-Darling GOF Test	
5% A-D Critical Value	0.79	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0901	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0534	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.88	k star (bias corrected MLE)	0.874
Theta hat (MLE)	0.0353	Theta star (bias corrected MLE)	0.0355
nu hat (MLE)	542.3	nu star (bias corrected)	538.3
MLE Mean (bias corrected)	0.031	MLE Sd (bias corrected)	0.0332

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.589	nu hat (KM)	426.3
Approximate Chi Square Value (426.33, α)	379.5	Adjusted Chi Square Value (426.33, β)	379.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.0299	95% Gamma Adjusted KM-UCL (use when n<50)	0.0299

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.00138	Mean	0.0279
Maximum	0.211	Median	0.0115
SD	0.0339	CV	1.215
k hat (MLE)	0.926	k star (bias corrected MLE)	0.92
Theta hat (MLE)	0.0301	Theta star (bias corrected MLE)	0.0303
nu hat (MLE)	670.6	nu star (bias corrected)	666.4
MLE Mean (bias corrected)	0.0279	MLE Sd (bias corrected)	0.0291
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (666.37, α)	607.5	Adjusted Chi Square Value (666.37, β)	607.3
95% Gamma Approximate UCL (use when n>=50)	0.0306	95% Gamma Adjusted UCL (use when n<50)	0.0306

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0686	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0505	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0266	Mean in Log Scale	-4.542
SD in Original Scale	0.0347	SD in Log Scale	1.505
95% t UCL (assumes normality of ROS data)	0.0296	95% Percentile Bootstrap UCL	0.0296
95% BCA Bootstrap UCL	0.0298	95% Bootstrap t UCL	0.0298
95% H-UCL (Log ROS)	0.0406		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0265	Mean in Log Scale	-4.606
SD in Original Scale	0.0348	SD in Log Scale	1.597
95% t UCL (Assumes normality)	0.0295	95% H-Stat UCL	0.0448
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.0346		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***acenaphthylene***208-96-8***ug/l****)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	177
Number of Detects	209	Number of Non-Detects	153
Number of Distinct Detects	164	Number of Distinct Non-Detects	18
Minimum Detect	0.00216	Minimum Non-Detect	0.00202
Maximum Detect	0.0248	Maximum Non-Detect	0.00244
Variance Detects	5.25E-06	Percent Non-Detects	42.27%
Mean Detects	0.00412	SD Detects	0.00229
Median Detects	0.00354	CV Detects	0.556
Skewness Detects	4.462	Kurtosis Detects	32.69
Mean of Logged Detects	-5.583	SD of Logged Detects	0.39
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.676	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0613	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00323	Standard Error of Mean	1.07E-04
SD	0.00202	95% KM (BCA) UCL	0.00345
95% KM (t) UCL	0.00341	95% KM (Percentile Bootstrap) UCL	0.00343
95% KM (z) UCL	0.00341	95% KM Bootstrap t UCL	0.00344
90% KM Chebyshev UCL	0.00355	95% KM Chebyshev UCL	0.0037
97.5% KM Chebyshev UCL	0.0039	99% KM Chebyshev UCL	0.00429
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.175	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.135	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0627	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.699	k star (bias corrected MLE)	5.62
Theta hat (MLE)	7.23E-04	Theta star (bias corrected MLE)	7.33E-04
nu hat (MLE)	2382	nu star (bias corrected)	2349
MLE Mean (bias corrected)	0.00412	MLE Sd (bias corrected)	0.00174
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.559	nu hat (KM)	1853
Approximate Chi Square Value (N/A, α)	1754	Adjusted Chi Square Value (N/A, β)	1753
95% Gamma Approximate KM-UCL (use when n>=50)	0.00342	95% Gamma Adjusted KM-UCL (use when n<50)	0.00342
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			

GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00216	Mean	0.0066
Maximum	0.0248	Median	0.00569
SD	0.00339	CV	0.513
k hat (MLE)	3.504	k star (bias corrected MLE)	3.477
Theta hat (MLE)	0.00188	Theta star (bias corrected MLE)	0.0019
nu hat (MLE)	2537	nu star (bias corrected)	2517
MLE Mean (bias corrected)	0.0066	MLE Sd (bias corrected)	0.00354
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2401	Adjusted Chi Square Value (N/A, β)	2401
95% Gamma Approximate UCL (use when n>=50)	0.00692	95% Gamma Adjusted UCL (use when n<50)	0.00692
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0994	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0613	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00301	Mean in Log Scale	-5.988
SD in Original Scale	0.00218	SD in Log Scale	0.59
95% t UCL (assumes normality of ROS data)	0.0032	95% Percentile Bootstrap UCL	0.00321
95% BCA Bootstrap UCL	0.00323	95% Bootstrap t UCL	0.00323
95% H-UCL (Log ROS)	0.00316		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00284	Mean in Log Scale	-6.106
SD in Original Scale	0.00229	SD in Log Scale	0.68
95% t UCL (Assumes normality)	0.00304	95% H-Stat UCL	0.00301
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00341	95% KM (% Bootstrap) UCL	0.00343
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***anthracene***120-12-7***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	253
Number of Detects	326	Number of Non-Detects	36
Number of Distinct Detects	247	Number of Distinct Non-Detects	10
Minimum Detect	0.0019	Minimum Non-Detect	0.00187
Maximum Detect	0.0279	Maximum Non-Detect	0.00207
Variance Detects	1.15E-05	Percent Non-Detects	9.95%
Mean Detects	0.00515	SD Detects	0.00338
Median Detects	0.00415	CV Detects	0.657
Skewness Detects	2.679	Kurtosis Detects	10.78
Mean of Logged Detects	-5.417	SD of Logged Detects	0.515
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.758	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.168	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0491	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00483	Standard Error of Mean	1.77E-04
SD	0.00335	95% KM (BCA) UCL	0.00514
95% KM (t) UCL	0.00512	95% KM (Percentile Bootstrap) UCL	0.00513
95% KM (z) UCL	0.00512	95% KM Bootstrap t UCL	0.00515
90% KM Chebyshev UCL	0.00536	95% KM Chebyshev UCL	0.0056
97.5% KM Chebyshev UCL	0.00593	99% KM Chebyshev UCL	0.00658
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.191	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.123	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0506	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	3.518	k star (bias corrected MLE) 3.488
Theta hat (MLE)	0.00146	Theta star (bias corrected MLE) 0.00148
nu hat (MLE)	2294	nu star (bias corrected) 2274
MLE Mean (bias corrected)	0.00515	MLE Sd (bias corrected) 0.00276

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.072	nu hat (KM) 1500
Approximate Chi Square Value (N/A, α)	1411	Adjusted Chi Square Value (N/A, β) 1411
95% Gamma Approximate KM-UCL (use when n \geq 50)	0.00513	95% Gamma Adjusted KM-UCL (use when n $<$ 50) 0.00513

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0019	Mean 0.00564
Maximum	0.0279	Median 0.00434
SD	0.00352	CV 0.625
k hat (MLE)	3.332	k star (bias corrected MLE) 3.307
Theta hat (MLE)	0.00169	Theta star (bias corrected MLE) 0.0017
nu hat (MLE)	2413	nu star (bias corrected) 2394
MLE Mean (bias corrected)	0.00564	MLE Sd (bias corrected) 0.0031
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2281	Adjusted Chi Square Value (N/A, β) 2281
95% Gamma Approximate UCL (use when n \geq 50)	0.00591	95% Gamma Adjusted UCL (use when n $<$ 50) 0.00592

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0874	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0491	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00478	Mean in Log Scale -5.532
SD in Original Scale	0.0034	SD in Log Scale 0.601
95% t UCL (assumes normality of ROS data)	0.00508	95% Percentile Bootstrap UCL 0.00508
95% BCA Bootstrap UCL	0.00511	95% Bootstrap t UCL 0.0051
95% H-UCL (Log ROS)	0.00503	

DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00474	Mean in Log Scale -5.568
SD in Original Scale	0.00345	SD in Log Scale 0.668
95% t UCL (Assumes normality)	0.00504	95% H-Stat UCL 0.0051
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		

Suggested UCL to Use		
95% KM (BCA) UCL	0.00514	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***benzo(a)anthracene***56-55-3***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 220
Number of Detects	248	Number of Non-Detects 114
Number of Distinct Detects	206	Number of Distinct Non-Detects 16
Minimum Detect	0.00161	Minimum Non-Detect 0.00121
Maximum Detect	0.0555	Maximum Non-Detect 0.00308
Variance Detects	3.69E-05	Percent Non-Detects 31.49%
Mean Detects	0.00655	SD Detects 0.00607
Median Detects	0.00491	CV Detects 0.927
Skewness Detects	4.82	Kurtosis Detects 29.29
Mean of Logged Detects	-5.217	SD of Logged Detects 0.537

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.543	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.249	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0563	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00501	Standard Error of Mean	2.97E-04
SD	0.00552	95% KM (BCA) UCL	0.00556
95% KM (t) UCL	0.0055	95% KM (Percentile Bootstrap) UCL	0.0055
95% KM (z) UCL	0.0055	95% KM Bootstrap t UCL	0.00559
90% KM Chebyshev UCL	0.0059	95% KM Chebyshev UCL	0.0063
97.5% KM Chebyshev UCL	0.00686	99% KM Chebyshev UCL	0.00796

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.45	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.139	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0586	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.802	k star (bias corrected MLE)	2.771
Theta hat (MLE)	0.00234	Theta star (bias corrected MLE)	0.00236
nu hat (MLE)	1390	nu star (bias corrected)	1374
MLE Mean (bias corrected)	0.00655	MLE Sd (bias corrected)	0.00394

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.826	nu hat (KM)	597.8
Approximate Chi Square Value (597.76, α)	542	Adjusted Chi Square Value (597.76, β)	541.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.00553	95% Gamma Adjusted KM-UCL (use when n<50)	0.00553

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00161	Mean	0.00764
Maximum	0.0555	Median	0.00695
SD	0.00527	CV	0.691
k hat (MLE)	3.499	k star (bias corrected MLE)	3.472
Theta hat (MLE)	0.00218	Theta star (bias corrected MLE)	0.0022
nu hat (MLE)	2533	nu star (bias corrected)	2514
MLE Mean (bias corrected)	0.00764	MLE Sd (bias corrected)	0.0041
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2398	Adjusted Chi Square Value (N/A, β)	2398
95% Gamma Approximate UCL (use when n>=50)	0.008	95% Gamma Adjusted UCL (use when n<50)	0.00801

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0957	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0563	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00502	Mean in Log Scale	-5.599
SD in Original Scale	0.00552	SD in Log Scale	0.739
95% t UCL (assumes normality of ROS data)	0.0055	95% Percentile Bootstrap UCL	0.0055
95% BCA Bootstrap UCL	0.00557	95% Bootstrap t UCL	0.00561
95% H-UCL (Log ROS)	0.00525		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00491	Mean in Log Scale	-5.658
SD in Original Scale	0.00558	SD in Log Scale	0.792
95% t UCL (Assumes normality)	0.0054	95% H-Stat UCL	0.00519
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00556		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***benzo(a)pyrene***50-32-8***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	140
Number of Detects	135	Number of Non-Detects	227
Number of Distinct Detects	120	Number of Distinct Non-Detects	23
Minimum Detect	0.00247	Minimum Non-Detect	0.00215

Maximum Detect	0.0463	Maximum Non-Detect	0.00494
Variance Detects	4.79E-05	Percent Non-Detects	62.71%
Mean Detects	0.0085	SD Detects	0.00692
Median Detects	0.00634	CV Detects	0.814
Skewness Detects	3.481	Kurtosis Detects	13.65
Mean of Logged Detects	-4.939	SD of Logged Detects	0.521
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.597	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.255	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0763	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00483	Standard Error of Mean	2.85E-04
SD	0.00511	95% KM (BCA) UCL	0.00533
95% KM (t) UCL	0.0053	95% KM (Percentile Bootstrap) UCL	0.00533
95% KM (z) UCL	0.0053	95% KM Bootstrap t UCL	0.00538
90% KM Chebyshev UCL	0.00568	95% KM Chebyshev UCL	0.00607
97.5% KM Chebyshev UCL	0.00661	99% KM Chebyshev UCL	0.00767
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.713	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.176	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.081	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.064	k star (bias corrected MLE)	3.001
Theta hat (MLE)	0.00277	Theta star (bias corrected MLE)	0.00283
nu hat (MLE)	827.2	nu star (bias corrected)	810.2
MLE Mean (bias corrected)	0.0085	MLE Sd (bias corrected)	0.00491
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.893	nu hat (KM)	646.8
Approximate Chi Square Value (646.80, α)	588.8	Adjusted Chi Square Value (646.80, β)	588.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0053	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0053
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00247	Mean	0.00944
Maximum	0.0463	Median	0.01
SD	0.00428	CV	0.453
k hat (MLE)	7.606	k star (bias corrected MLE)	7.545
Theta hat (MLE)	0.00124	Theta star (bias corrected MLE)	0.00125
nu hat (MLE)	5507	nu star (bias corrected)	5463
MLE Mean (bias corrected)	0.00944	MLE Sd (bias corrected)	0.00344
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	5292	Adjusted Chi Square Value (N/A, β)	5291
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00975	95% Gamma Adjusted UCL (use when $n < 50$)	0.00975
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.137	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0763	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00442	Mean in Log Scale	-5.82
SD in Original Scale	0.00532	SD in Log Scale	0.86
95% t UCL (assumes normality of ROS data)	0.00488	95% Percentile Bootstrap UCL	0.00488
95% BCA Bootstrap UCL	0.00495	95% Bootstrap t UCL	0.00495
95% H-UCL (Log ROS)	0.00471		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00453	Mean in Log Scale	-5.691
SD in Original Scale	0.00522	SD in Log Scale	0.67
95% t UCL (Assumes normality)	0.00499	95% H-Stat UCL	0.00452
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			

95% KM (t) UCL0.0053 95% KM (% Bootstrap) UCL0.00533

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***benzo(b)fluoranthene***205-99-2***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations266
Number of Detects	338	Number of Non-Detects24
Number of Distinct Detects	260	Number of Distinct Non-Detects10
Minimum Detect	0.00113	Minimum Non-Detect0.00112
Maximum Detect	0.0399	Maximum Non-Detect0.0016
Variance Detects	1.96E-05	Percent Non-Detects6.63%
Mean Detects	0.00514	SD Detects0.00443
Median Detects	0.00407	CV Detects0.861
Skewness Detects	4.049	Kurtosis Detects22.94
Mean of Logged Detects	-5.477	SD of Logged Detects0.598
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.643	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.205	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0482	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00488	Standard Error of Mean2.31E-04
SD	0.00439	95% KM (BCA) UCL0.00529
95% KM (t) UCL	0.00526	95% KM (Percentile Bootstrap) UCL0.00527
95% KM (z) UCL	0.00526	95% KM Bootstrap t UCL0.00533
90% KM Chebyshev UCL	0.00557	95% KM Chebyshev UCL0.00588
97.5% KM Chebyshev UCL	0.00632	99% KM Chebyshev UCL0.00717
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	6.807	Anderson-Darling GOF Test
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.101	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0499	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.574	k star (bias corrected MLE)2.553
Theta hat (MLE)	0.002	Theta star (bias corrected MLE)0.00201
nu hat (MLE)	1740	nu star (bias corrected)1726
MLE Mean (bias corrected)	0.00514	MLE Sd (bias corrected)0.00322
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.236	nu hat (KM)895
Approximate Chi Square Value (894.98, α)	826.5	Adjusted Chi Square Value (894.98, β)826.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.00528	95% Gamma Adjusted KM-UCL (use when n<50)0.00528
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00113	Mean0.00546
Maximum	0.0399	Median0.00426
SD	0.00445	CV0.814
k hat (MLE)	2.54	k star (bias corrected MLE)2.52
Theta hat (MLE)	0.00215	Theta star (bias corrected MLE)0.00217
nu hat (MLE)	1839	nu star (bias corrected)1825
MLE Mean (bias corrected)	0.00546	MLE Sd (bias corrected)0.00344
		Adjusted Level of Significance (β)0.0493
Approximate Chi Square Value (N/A, α)	1727	Adjusted Chi Square Value (N/A, β)1726
95% Gamma Approximate UCL (use when n>=50)	0.00577	95% Gamma Adjusted UCL (use when n<50)0.00578
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0562	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0482	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00487	Mean in Log Scale-5.567
SD in Original Scale	0.0044	SD in Log Scale0.67
95% t UCL (assumes normality of ROS data)	0.00525	95% Percentile Bootstrap UCL0.00524

95% BCA Bootstrap UCL	0.00533	95% Bootstrap t UCL	0.00532
95% H-UCL (Log ROS)	0.00511		

DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	0.00484	Mean in Log Scale	-5.603
SD in Original Scale	0.00442	SD in Log Scale	0.747
95% t UCL (Assumes normality)	0.00523	95% H-Stat UCL	0.00526
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.00529

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***benzo(e)pyrene***192-97-2***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	263
Number of Detects	335	Number of Non-Detects	27
Number of Distinct Detects	252	Number of Distinct Non-Detects	13
Minimum Detect	0.00168	Minimum Non-Detect	0.00136
Maximum Detect	0.0395	Maximum Non-Detect	0.0018
Variance Detects	1.88E-05	Percent Non-Detects	7.46%
Mean Detects	0.00503	SD Detects	0.00434
Median Detects	0.00399	CV Detects	0.863
Skewness Detects	4.261	Kurtosis Detects	24.16
Mean of Logged Detects	-5.481	SD of Logged Detects	0.551

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.601	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.226	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0484	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00476	Standard Error of Mean	2.25E-04
SD	0.00428	95% KM (BCA) UCL	0.00513
95% KM (t) UCL	0.00513	95% KM (Percentile Bootstrap) UCL	0.00514
95% KM (z) UCL	0.00513	95% KM Bootstrap t UCL	0.0052
90% KM Chebyshev UCL	0.00543	95% KM Chebyshev UCL	0.00574
97.5% KM Chebyshev UCL	0.00616	99% KM Chebyshev UCL	0.007

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	11.17	Anderson-Darling GOF Test
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.138	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0501	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.813	k star (bias corrected MLE)	2.789
Theta hat (MLE)	0.00179	Theta star (bias corrected MLE)	0.0018
nu hat (MLE)	1884	nu star (bias corrected)	1869
MLE Mean (bias corrected)	0.00503	MLE Sd (bias corrected)	0.00301

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.237	nu hat (KM)	895.3
Approximate Chi Square Value (895.31, α)	826.9	Adjusted Chi Square Value (895.31, β)	826.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.00515	95% Gamma Adjusted KM-UCL (use when n<50)	0.00515

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.00168	Mean	0.0054
Maximum	0.0395	Median	0.00415
SD	0.00438	CV	0.81
k hat (MLE)	2.732	k star (bias corrected MLE)	2.712
Theta hat (MLE)	0.00198	Theta star (bias corrected MLE)	0.00199
nu hat (MLE)	1978	nu star (bias corrected)	1963

MLE Mean (bias corrected)	0.0054	MLE Sd (bias corrected)	0.00328
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1861	Adjusted Chi Square Value (N/A, β)	1861
95% Gamma Approximate UCL (use when n>=50)	0.0057	95% Gamma Adjusted UCL (use when n<50)	0.0057
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0848	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0484	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00475	Mean in Log Scale	-5.572
SD in Original Scale	0.00429	SD in Log Scale	0.622
95% t UCL (assumes normality of ROS data)	0.00512	95% Percentile Bootstrap UCL	0.00513
95% BCA Bootstrap UCL	0.00519	95% Bootstrap t UCL	0.0052
95% H-UCL (Log ROS)	0.0049		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00471	Mean in Log Scale	-5.603
SD in Original Scale	0.00432	SD in Log Scale	0.684
95% t UCL (Assumes normality)	0.00509	95% H-Stat UCL	0.00499
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00513		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***benzo(g,h,i)perylene***191-24-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	227
Number of Detects	280	Number of Non-Detects	82
Number of Distinct Detects	215	Number of Distinct Non-Detects	19
Minimum Detect	0.00169	Minimum Non-Detect	0.00164
Maximum Detect	0.0358	Maximum Non-Detect	0.00288
Variance Detects	1.43E-05	Percent Non-Detects	22.65%
Mean Detects	0.00445	SD Detects	0.00378
Median Detects	0.00341	CV Detects	0.848
Skewness Detects	4.289	Kurtosis Detects	24.92
Mean of Logged Detects	-5.593	SD of Logged Detects	0.533
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.601	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.232	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0529	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00383	Standard Error of Mean	1.85E-04
SD	0.00351	95% KM (BCA) UCL	0.00411
95% KM (t) UCL	0.00413	95% KM (Percentile Bootstrap) UCL	0.00414
95% KM (z) UCL	0.00413	95% KM Bootstrap t UCL	0.00418
90% KM Chebyshev UCL	0.00438	95% KM Chebyshev UCL	0.00463
97.5% KM Chebyshev UCL	0.00498	99% KM Chebyshev UCL	0.00567
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.12	Anderson-Darling GOF Test	
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.147	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0548	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.951	k star (bias corrected MLE)	2.922
Theta hat (MLE)	0.00151	Theta star (bias corrected MLE)	0.00152
nu hat (MLE)	1653	nu star (bias corrected)	1636
MLE Mean (bias corrected)	0.00445	MLE Sd (bias corrected)	0.00261
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.188	nu hat (KM)	859.9

Approximate Chi Square Value (859.92, α)	792.9	Adjusted Chi Square Value (859.92, β)	792.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00415	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00415
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00169	Mean	0.00571
Maximum	0.0358	Median	0.00401
SD	0.00405	CV	0.71
k hat (MLE)	2.61	k star (bias corrected MLE)	2.591
Theta hat (MLE)	0.00219	Theta star (bias corrected MLE)	0.0022
nu hat (MLE)	1890	nu star (bias corrected)	1876
MLE Mean (bias corrected)	0.00571	MLE Sd (bias corrected)	0.00355
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1776	Adjusted Chi Square Value (N/A, β)	1776
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00603	95% Gamma Adjusted UCL (use when $n < 50$)	0.00603
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0966	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0529	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00373	Mean in Log Scale	-5.851
SD in Original Scale	0.00359	SD in Log Scale	0.681
95% t UCL (assumes normality of ROS data)	0.00404	95% Percentile Bootstrap UCL	0.00404
95% BCA Bootstrap UCL	0.00408	95% Bootstrap t UCL	0.00408
95% H-UCL (Log ROS)	0.00388		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00365	Mean in Log Scale	-5.912
SD in Original Scale	0.00364	SD in Log Scale	0.759
95% t UCL (Assumes normality)	0.00397	95% H-Stat UCL	0.0039
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00411		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***benzo(j,k)fluoranthene***bkjflanth***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	214
Number of Detects	238	Number of Non-Detects	124
Number of Distinct Detects	201	Number of Distinct Non-Detects	17
Minimum Detect	0.00199	Minimum Non-Detect	0.00155
Maximum Detect	0.0365	Maximum Non-Detect	0.00298
Variance Detects	2.41E-05	Percent Non-Detects	34.25%
Mean Detects	0.00603	SD Detects	0.00491
Median Detects	0.00445	CV Detects	0.815
Skewness Detects	3.712	Kurtosis Detects	17.18
Mean of Logged Detects	-5.284	SD of Logged Detects	0.52
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.603	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.233	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0574	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00456	Standard Error of Mean	2.38E-04
SD	0.00447	95% KM (BCA) UCL	0.00499
95% KM (t) UCL	0.00495	95% KM (Percentile Bootstrap) UCL	0.00497
95% KM (z) UCL	0.00495	95% KM Bootstrap t UCL	0.00501
90% KM Chebyshev UCL	0.00527	95% KM Chebyshev UCL	0.00559
97.5% KM Chebyshev UCL	0.00604	99% KM Chebyshev UCL	0.00692
Gamma GOF Tests on Detected Observations Only			

A-D Test Statistic	12.73	Anderson-Darling GOF Test	
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.153	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0596	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	3.063	k star (bias corrected MLE)	3.027
Theta hat (MLE)	0.00197	Theta star (bias corrected MLE)	0.00199
nu hat (MLE)	1458	nu star (bias corrected)	1441
MLE Mean (bias corrected)	0.00603	MLE Sd (bias corrected)	0.00346

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.039	nu hat (KM)	752.6
Approximate Chi Square Value (752.57, α)	689.9	Adjusted Chi Square Value (752.57, β)	689.7
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00497	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00497

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00199	Mean	0.00739
Maximum	0.0365	Median	0.00648
SD	0.0044	CV	0.596
k hat (MLE)	3.648	k star (bias corrected MLE)	3.62
Theta hat (MLE)	0.00202	Theta star (bias corrected MLE)	0.00204
nu hat (MLE)	2641	nu star (bias corrected)	2621
MLE Mean (bias corrected)	0.00739	MLE Sd (bias corrected)	0.00388
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2503	Adjusted Chi Square Value (N/A, β)	2502
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00774	95% Gamma Adjusted UCL (use when $n < 50$)	0.00774

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0574	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00451	Mean in Log Scale	-5.697
SD in Original Scale	0.00451	SD in Log Scale	0.736
95% t UCL (assumes normality of ROS data)	0.0049	95% Percentile Bootstrap UCL	0.00493
95% BCA Bootstrap UCL	0.00501	95% Bootstrap t UCL	0.00497
95% H-UCL (Log ROS)	0.00474		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00441	Mean in Log Scale	-5.75
SD in Original Scale	0.00457	SD in Log Scale	0.776
95% t UCL (Assumes normality)	0.00481	95% H-Stat UCL	0.00466
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	0.00499		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***benzonaphthothiophene***61523-34-0***ug/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	251
Number of Detects	311	Number of Non-Detects	24
Number of Distinct Detects	246	Number of Distinct Non-Detects	8
Minimum Detect	0.00122	Minimum Non-Detect	0.00118
Maximum Detect	0.0245	Maximum Non-Detect	0.00128
Variance Detects	7.13E-06	Percent Non-Detects	7.16%
Mean Detects	0.00385	SD Detects	0.00267
Median Detects	0.0034	CV Detects	0.694
Skewness Detects	4.325	Kurtosis Detects	27.29
Mean of Logged Detects	-5.701	SD of Logged Detects	0.5

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.659	Normal GOF Test on Detected Observations Only	

5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.179	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00366	Standard Error of Mean	1.46E-04
SD	0.00266	95% KM (BCA) UCL	0.0039
95% KM (t) UCL	0.0039	95% KM (Percentile Bootstrap) UCL	0.00391
95% KM (z) UCL	0.0039	95% KM Bootstrap t UCL	0.00394
90% KM Chebyshev UCL	0.0041	95% KM Chebyshev UCL	0.00429
97.5% KM Chebyshev UCL	0.00457	99% KM Chebyshev UCL	0.00511
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.815	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0885	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0516	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.705	k star (bias corrected MLE)	3.671
Theta hat (MLE)	0.00104	Theta star (bias corrected MLE)	0.00105
nu hat (MLE)	2304	nu star (bias corrected)	2283
MLE Mean (bias corrected)	0.00385	MLE Sd (bias corrected)	0.00201
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.893	nu hat (KM)	1268
Approximate Chi Square Value (N/A, α)	1187	Adjusted Chi Square Value (N/A, β)	1186
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00391	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00391
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00122	Mean	0.00429
Maximum	0.0245	Median	0.00357
SD	0.00302	CV	0.705
k hat (MLE)	3.083	k star (bias corrected MLE)	3.057
Theta hat (MLE)	0.00139	Theta star (bias corrected MLE)	0.0014
nu hat (MLE)	2066	nu star (bias corrected)	2048
MLE Mean (bias corrected)	0.00429	MLE Sd (bias corrected)	0.00245
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1944	Adjusted Chi Square Value (N/A, β)	1944
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00452	95% Gamma Adjusted UCL (use when $n < 50$)	0.00452
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0549	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00365	Mean in Log Scale	-5.782
SD in Original Scale	0.00267	SD in Log Scale	0.564
95% t UCL (assumes normality of ROS data)	0.00389	95% Percentile Bootstrap UCL	0.00391
95% BCA Bootstrap UCL	0.00392	95% Bootstrap t UCL	0.00394
95% H-UCL (Log ROS)	0.00383		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00362	Mean in Log Scale	-5.823
SD in Original Scale	0.00271	SD in Log Scale	0.652
95% t UCL (Assumes normality)	0.00386	95% H-Stat UCL	0.00391
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0039		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***benzothiophene***95-15-8***ug/l***)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 162
Number of Detects	169	Number of Non-Detects 193
Number of Distinct Detects	149	Number of Distinct Non-Detects 18
Minimum Detect	0.0016	Minimum Non-Detect 0.00155
Maximum Detect	0.0305	Maximum Non-Detect 0.00279
Variance Detects	1.84E-05	Percent Non-Detects 53.31%
Mean Detects	0.00559	SD Detects 0.00429
Median Detects	0.00422	CV Detects 0.768
Skewness Detects	2.964	Kurtosis Detects 11.31
Mean of Logged Detects	-5.366	SD of Logged Detects 0.548
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.687	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.208	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0682	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00356	Standard Error of Mean 1.89E-04
SD	0.00349	95% KM (BCA) UCL 0.00387
95% KM (t) UCL	0.00387	95% KM (Percentile Bootstrap) UCL 0.00389
95% KM (z) UCL	0.00387	95% KM Bootstrap t UCL 0.00391
90% KM Chebyshev UCL	0.00413	95% KM Chebyshev UCL 0.00439
97.5% KM Chebyshev UCL	0.00474	99% KM Chebyshev UCL 0.00544
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	7.208	Anderson-Darling GOF Test
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.156	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0721	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.952	k star (bias corrected MLE) 2.903
Theta hat (MLE)	0.00189	Theta star (bias corrected MLE) 0.00192
nu hat (MLE)	997.6	nu star (bias corrected) 981.2
MLE Mean (bias corrected)	0.00559	MLE Sd (bias corrected) 0.00328
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.042	nu hat (KM) 754.2
Approximate Chi Square Value (754.23, α)	691.5	Adjusted Chi Square Value (754.23, β) 691.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.00389	95% Gamma Adjusted KM-UCL (use when n<50) 0.00389
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0016	Mean 0.00794
Maximum	0.0305	Median 0.01
SD	0.00366	CV 0.461
k hat (MLE)	4.172	k star (bias corrected MLE) 4.139
Theta hat (MLE)	0.0019	Theta star (bias corrected MLE) 0.00192
nu hat (MLE)	3020	nu star (bias corrected) 2997
MLE Mean (bias corrected)	0.00794	MLE Sd (bias corrected) 0.0039
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2870	Adjusted Chi Square Value (N/A, β) 2870
95% Gamma Approximate UCL (use when n>=50)	0.00829	95% Gamma Adjusted UCL (use when n<50) 0.00829
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.113	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0682	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00328	Mean in Log Scale -6.121
SD in Original Scale	0.00366	SD in Log Scale 0.878
95% t UCL (assumes normality of ROS data)	0.0036	95% Percentile Bootstrap UCL 0.00359
95% BCA Bootstrap UCL	0.00365	95% Bootstrap t UCL 0.00365
95% H-UCL (Log ROS)	0.00354	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00328	Mean in Log Scale -6.064
SD in Original Scale	0.00364	SD in Log Scale 0.757
95% t UCL (Assumes normality)	0.0036	95% H-Stat UCL 0.00335
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (t) UCL0.00387 95% KM (% Bootstrap) UCL0.00389

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***carbazole***86-74-8***ug/l****)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations133
Number of Detects	128	Number of Non-Detects234
Number of Distinct Detects	116	Number of Distinct Non-Detects24
Minimum Detect	0.00198	Minimum Non-Detect0.00157
Maximum Detect	0.0379	Maximum Non-Detect0.00533
Variance Detects	4.00E-05	Percent Non-Detects64.64%
Mean Detects	0.00907	SD Detects0.00632
Median Detects	0.00669	CV Detects0.697
Skewness Detects	2.096	Kurtosis Detects4.657
Mean of Logged Detects	-4.876	SD of Logged Detects0.561

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.754	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.228	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0783	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00466	Standard Error of Mean2.89E-04
SD	0.00502	95% KM (BCA) UCL0.00516
95% KM (t) UCL	0.00514	95% KM (Percentile Bootstrap) UCL0.00519
95% KM (z) UCL	0.00514	95% KM Bootstrap t UCL0.00518
90% KM Chebyshev UCL	0.00553	95% KM Chebyshev UCL0.00592
97.5% KM Chebyshev UCL	0.00647	99% KM Chebyshev UCL0.00754

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	5.27	Anderson-Darling GOF Test
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.158	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0828	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	3.037	k star (bias corrected MLE)2.971
Theta hat (MLE)	0.00299	Theta star (bias corrected MLE)0.00305
nu hat (MLE)	777.4	nu star (bias corrected)760.5
MLE Mean (bias corrected)	0.00907	MLE Sd (bias corrected)0.00526

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.863	nu hat (KM)625
Approximate Chi Square Value (625.03, α)	568	Adjusted Chi Square Value (625.03, β)567.8
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00513	95% Gamma Adjusted KM-UCL (use when $n < 50$)0.00513

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.00198	Mean	0.00967
Maximum	0.0379	Median	0.01
SD	0.00378	CV	0.391
k hat (MLE)	8.168	k star (bias corrected MLE)	8.102
Theta hat (MLE)	0.00118	Theta star (bias corrected MLE)	0.00119
nu hat (MLE)	5914	nu star (bias corrected)	5866
MLE Mean (bias corrected)	0.00967	MLE Sd (bias corrected)	0.0034
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	5689	Adjusted Chi Square Value (N/A, β)	5688
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00997	95% Gamma Adjusted UCL (use when $n < 50$)	0.00997

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.124	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0783	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00449	Mean in Log Scale	-5.844
SD in Original Scale	0.00512	SD in Log Scale	0.918
95% t UCL (assumes normality of ROS data)	0.00493	95% Percentile Bootstrap UCL	0.00492
95% BCA Bootstrap UCL	0.00498	95% Bootstrap t UCL	0.00499
95% H-UCL (Log ROS)	0.00487		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00471	Mean in Log Scale	-5.654
SD in Original Scale	0.00496	SD in Log Scale	0.689
95% t UCL (Assumes normality)	0.00514	95% H-Stat UCL	0.00476
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.00514	95% KM (% Bootstrap) UCL	0.00519

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***chrysene***218-01-9***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	279
Number of Detects	345	Number of Non-Detects	17
Number of Distinct Detects	274	Number of Distinct Non-Detects	5
Minimum Detect	0.00181	Minimum Non-Detect	0.00162
Maximum Detect	0.0652	Maximum Non-Detect	0.00179
Variance Detects	4.29E-05	Percent Non-Detects	4.70%
Mean Detects	0.00852	SD Detects	0.00655
Median Detects	0.00702	CV Detects	0.769
Skewness Detects	4.514	Kurtosis Detects	28.98
Mean of Logged Detects	-4.928	SD of Logged Detects	0.53

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.634	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0477	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00819	Standard Error of Mean	3.45E-04
SD	0.00655	95% KM (BCA) UCL	0.00874
95% KM (t) UCL	0.00876	95% KM (Percentile Bootstrap) UCL	0.00878
95% KM (z) UCL	0.00876	95% KM Bootstrap t UCL	0.00888
90% KM Chebyshev UCL	0.00923	95% KM Chebyshev UCL	0.00969
97.5% KM Chebyshev UCL	0.0103	99% KM Chebyshev UCL	0.0116

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.349	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.101	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0493	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	3.245	k star (bias corrected MLE)	3.219
Theta hat (MLE)	0.00262	Theta star (bias corrected MLE)	0.00265
nu hat (MLE)	2239	nu star (bias corrected)	2221
MLE Mean (bias corrected)	0.00852	MLE Sd (bias corrected)	0.00475

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.565	nu hat (KM)	1133
Approximate Chi Square Value (N/A, α)	1056	Adjusted Chi Square Value (N/A, β)	1056
95% Gamma Approximate KM-UCL (use when n>=50)	0.00879	95% Gamma Adjusted KM-UCL (use when n<50)	0.00879

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00181	Mean	0.00859

Maximum	0.0652	Median	0.00732
SD	0.0064	CV	0.745
k hat (MLE)	3.385	k star (bias corrected MLE)	3.359
Theta hat (MLE)	0.00254	Theta star (bias corrected MLE)	0.00256
nu hat (MLE)	2451	nu star (bias corrected)	2432
MLE Mean (bias corrected)	0.00859	MLE Sd (bias corrected)	0.00468
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2318	Adjusted Chi Square Value (N/A, β)	2318
95% Gamma Approximate UCL (use when n>=50)	0.00901	95% Gamma Adjusted UCL (use when n<50)	0.00901

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0569	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0477	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00822	Mean in Log Scale	-4.986
SD in Original Scale	0.00654	SD in Log Scale	0.581
95% t UCL (assumes normality of ROS data)	0.00878	95% Percentile Bootstrap UCL	0.0088
95% BCA Bootstrap UCL	0.00891	95% Bootstrap t UCL	0.00887
95% H-UCL (Log ROS)	0.00856		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00816	Mean in Log Scale	-5.029
SD in Original Scale	0.0066	SD in Log Scale	0.69
95% t UCL (Assumes normality)	0.00873	95% H-Stat UCL	0.0089
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (BCA) UCL	0.00874	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***decalin, cis- & trans-***decalinc_t***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	182
Number of Detects	210	Number of Non-Detects	152
Number of Distinct Detects	172	Number of Distinct Non-Detects	17
Minimum Detect	0.00226	Minimum Non-Detect	0.00216
Maximum Detect	0.0196	Maximum Non-Detect	0.00267
Variance Detects	6.11E-06	Percent Non-Detects	41.99%
Mean Detects	0.00473	SD Detects	0.00247
Median Detects	0.004	CV Detects	0.522
Skewness Detects	2.394	Kurtosis Detects	8.639
Mean of Logged Detects	-5.454	SD of Logged Detects	0.426

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.793	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.159	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0611	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00365	Standard Error of Mean	1.19E-04
SD	0.00227	95% KM (BCA) UCL	0.00386
95% KM (t) UCL	0.00385	95% KM (Percentile Bootstrap) UCL	0.00386
95% KM (z) UCL	0.00385	95% KM Bootstrap t UCL	0.00389
90% KM Chebyshev UCL	0.00401	95% KM Chebyshev UCL	0.00417
97.5% KM Chebyshev UCL	0.0044	99% KM Chebyshev UCL	0.00484

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.983	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.118	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0626	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	5.152	k star (bias corrected MLE)	5.082
Theta hat (MLE)	9.18E-04	Theta star (bias corrected MLE)	9.31E-04

nu hat (MLE)	2164	nu star (bias corrected)	2134
MLE Mean (bias corrected)	0.00473	MLE Sd (bias corrected)	0.0021
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.601	nu hat (KM)	1883
Approximate Chi Square Value (N/A, α)	1784	Adjusted Chi Square Value (N/A, β)	1783
95% Gamma Approximate KM-UCL (use when n>=50)	0.00386	95% Gamma Adjusted KM-UCL (use when n<50)	0.00386
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00226	Mean	0.00694
Maximum	0.0196	Median	0.00698
SD	0.00321	CV	0.462
k hat (MLE)	4.082	k star (bias corrected MLE)	4.05
Theta hat (MLE)	0.0017	Theta star (bias corrected MLE)	0.00171
nu hat (MLE)	2955	nu star (bias corrected)	2932
MLE Mean (bias corrected)	0.00694	MLE Sd (bias corrected)	0.00345
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2807	Adjusted Chi Square Value (N/A, β)	2807
95% Gamma Approximate UCL (use when n>=50)	0.00725	95% Gamma Adjusted UCL (use when n<50)	0.00725
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0907	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0611	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0034	Mean in Log Scale	-5.895
SD in Original Scale	0.00246	SD in Log Scale	0.645
95% t UCL (assumes normality of ROS data)	0.00362	95% Percentile Bootstrap UCL	0.00363
95% BCA Bootstrap UCL	0.00363	95% Bootstrap t UCL	0.00363
95% H-UCL (Log ROS)	0.00361		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00322	Mean in Log Scale	-6.013
SD in Original Scale	0.00259	SD in Log Scale	0.734
95% t UCL (Assumes normality)	0.00344	95% H-Stat UCL	0.00345
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00385	95% KM (% Bootstrap) UCL	0.00386
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***dibenzo(a,h)anthracene and dibenzo(a,c)anthracene***215-58-753-70-3***t			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	54
Number of Detects	25	Number of Non-Detects	337
Number of Distinct Detects	25	Number of Distinct Non-Detects	30
Minimum Detect	0.00228	Minimum Non-Detect	0.00218
Maximum Detect	0.0133	Maximum Non-Detect	0.0032
Variance Detects	9.41E-06	Percent Non-Detects	93.09%
Mean Detects	0.00482	SD Detects	0.00307
Median Detects	0.00345	CV Detects	0.637
Skewness Detects	1.657	Kurtosis Detects	1.973
Mean of Logged Detects	-5.484	SD of Logged Detects	0.523
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.765	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.226	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00236	Standard Error of Mean	5.55E-05
SD	0.00104	95% KM (BCA) UCL	0.00246
95% KM (t) UCL	0.00246	95% KM (Percentile Bootstrap) UCL	0.00246

95% KM (z) UCL	0.00245	95% KM Bootstrap t UCL	0.00249
90% KM Chebyshev UCL	0.00253	95% KM Chebyshev UCL	0.00261
97.5% KM Chebyshev UCL	0.00271	99% KM Chebyshev UCL	0.00292

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.4	Anderson-Darling GOF Test	
5% A-D Critical Value	0.75	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.209	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.176	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	3.522	k star (bias corrected MLE)	3.126
Theta hat (MLE)	0.00137	Theta star (bias corrected MLE)	0.00154
nu hat (MLE)	176.1	nu star (bias corrected)	156.3
MLE Mean (bias corrected)	0.00482	MLE Sd (bias corrected)	0.00272

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	5.214	nu hat (KM)	3775
Approximate Chi Square Value (N/A, α)	3633	Adjusted Chi Square Value (N/A, β)	3633
95% Gamma Approximate KM-UCL (use when n>=50)	0.00246	95% Gamma Adjusted KM-UCL (use when n<50)	0.00246

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.00228	Mean	0.00964
Maximum	0.0133	Median	0.01
SD	0.00154	CV	0.159
k hat (MLE)	20.78	k star (bias corrected MLE)	20.61
Theta hat (MLE)	4.64E-04	Theta star (bias corrected MLE)	4.68E-04
nu hat (MLE)	15046	nu star (bias corrected)	14923
MLE Mean (bias corrected)	0.00964	MLE Sd (bias corrected)	0.00212
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	14640	Adjusted Chi Square Value (N/A, β)	14638
95% Gamma Approximate UCL (use when n>=50)	0.00983	95% Gamma Adjusted UCL (use when n<50)	0.00983

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.883	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.186	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6.75E-04	Mean in Log Scale	-8.258
SD in Original Scale	0.00143	SD in Log Scale	1.339
95% t UCL (assumes normality of ROS data)	7.99E-04	95% Percentile Bootstrap UCL	8.05E-04
95% BCA Bootstrap UCL	8.22E-04	95% Bootstrap t UCL	8.29E-04
95% H-UCL (Log ROS)	7.54E-04		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00142	Mean in Log Scale	-6.668
SD in Original Scale	0.00122	SD in Log Scale	0.36
95% t UCL (Assumes normality)	0.00153	95% H-Stat UCL	0.0014
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.00246	95% KM (% Bootstrap) UCL	0.00246
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***dibenzothiophene***132-65-0***ug/l****)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	225
Number of Detects	312	Number of Non-Detects	50
Number of Distinct Detects	222	Number of Distinct Non-Detects	10
Minimum Detect	0.00146	Minimum Non-Detect	0.00142
Maximum Detect	0.0373	Maximum Non-Detect	0.00159
Variance Detects	1.20E-05	Percent Non-Detects	13.81%

Mean Detects	0.00409	SD Detects	0.00346
Median Detects	0.00299	CV Detects	0.846
Skewness Detects	4.454	Kurtosis Detects	32.75
Mean of Logged Detects	-5.703	SD of Logged Detects	0.591
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.662	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.224	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00372	Standard Error of Mean	1.76E-04
SD	0.00333	95% KM (BCA) UCL	0.00403
95% KM (t) UCL	0.00401	95% KM (Percentile Bootstrap) UCL	0.00402
95% KM (z) UCL	0.00401	95% KM Bootstrap t UCL	0.00406
90% KM Chebyshev UCL	0.00425	95% KM Chebyshev UCL	0.00449
97.5% KM Chebyshev UCL	0.00482	99% KM Chebyshev UCL	0.00547
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.89	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.115	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0517	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.617	k star (bias corrected MLE)	2.594
Theta hat (MLE)	0.00156	Theta star (bias corrected MLE)	0.00158
nu hat (MLE)	1633	nu star (bias corrected)	1619
MLE Mean (bias corrected)	0.00409	MLE Sd (bias corrected)	0.00254
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.244	nu hat (KM)	901
Approximate Chi Square Value (900.96, α)	832.3	Adjusted Chi Square Value (900.96, β)	832
95% Gamma Approximate KM-UCL (use when n>=50)	0.00403	95% Gamma Adjusted KM-UCL (use when n<50)	0.00403
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00146	Mean	0.0049
Maximum	0.0373	Median	0.00354
SD	0.00381	CV	0.776
k hat (MLE)	2.293	k star (bias corrected MLE)	2.276
Theta hat (MLE)	0.00214	Theta star (bias corrected MLE)	0.00215
nu hat (MLE)	1660	nu star (bias corrected)	1648
MLE Mean (bias corrected)	0.0049	MLE Sd (bias corrected)	0.00325
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1555	Adjusted Chi Square Value (N/A, β)	1554
95% Gamma Approximate UCL (use when n>=50)	0.0052	95% Gamma Adjusted UCL (use when n<50)	0.0052
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.084	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00365	Mean in Log Scale	-5.883
SD in Original Scale	0.00339	SD in Log Scale	0.714
95% t UCL (assumes normality of ROS data)	0.00394	95% Percentile Bootstrap UCL	0.00397
95% BCA Bootstrap UCL	0.004	95% Bootstrap t UCL	0.00401
95% H-UCL (Log ROS)	0.00386		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00362	Mean in Log Scale	-5.911
SD in Original Scale	0.00341	SD in Log Scale	0.755
95% t UCL (Assumes normality)	0.00392	95% H-Stat UCL	0.00389
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00403		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***fluoranthene***206-44-0***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 274
Number of Detects	349	Number of Non-Detects 13
Number of Distinct Detects	268	Number of Distinct Non-Detects 6
Minimum Detect	0.0026	Minimum Non-Detect 0.00262
Maximum Detect	0.137	Maximum Non-Detect 0.00291
Variance Detects	3.41E-04	Percent Non-Detects 3.59%
Mean Detects	0.0309	SD Detects 0.0185
Median Detects	0.0289	CV Detects 0.597
Skewness Detects	1.303	Kurtosis Detects 4.312
Mean of Logged Detects	-3.679	SD of Logged Detects 0.697
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.925	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.0624	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0474	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0299	Standard Error of Mean 9.92E-04
SD	0.0188	95% KM (BCA) UCL 0.0316
95% KM (t) UCL	0.0316	95% KM (Percentile Bootstrap) UCL 0.0315
95% KM (z) UCL	0.0315	95% KM Bootstrap t UCL 0.0317
90% KM Chebyshev UCL	0.0329	95% KM Chebyshev UCL 0.0342
97.5% KM Chebyshev UCL	0.0361	99% KM Chebyshev UCL 0.0398
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.654	Anderson-Darling GOF Test
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0613	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0492	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.615	k star (bias corrected MLE) 2.595
Theta hat (MLE)	0.0118	Theta star (bias corrected MLE) 0.0119
nu hat (MLE)	1825	nu star (bias corrected) 1811
MLE Mean (bias corrected)	0.0309	MLE Sd (bias corrected) 0.0192
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.519	nu hat (KM) 1824
Approximate Chi Square Value (N/A, α)	1726	Adjusted Chi Square Value (N/A, β) 1725
95% Gamma Approximate KM-UCL (use when n>=50)	0.0316	95% Gamma Adjusted KM-UCL (use when n<50) 0.0316
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0026	Mean 0.0302
Maximum	0.137	Median 0.0285
SD	0.0185	CV 0.614
k hat (MLE)	2.514	k star (bias corrected MLE) 2.495
Theta hat (MLE)	0.012	Theta star (bias corrected MLE) 0.0121
nu hat (MLE)	1820	nu star (bias corrected) 1806
MLE Mean (bias corrected)	0.0302	MLE Sd (bias corrected) 0.0191
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1709	Adjusted Chi Square Value (N/A, β) 1708
95% Gamma Approximate UCL (use when n>=50)	0.0319	95% Gamma Adjusted UCL (use when n<50) 0.0319
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.103	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0474	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.03	Mean in Log Scale -3.736
SD in Original Scale	0.0187	SD in Log Scale 0.746
95% t UCL (assumes normality of ROS data)	0.0316	95% Percentile Bootstrap UCL 0.0317
95% BCA Bootstrap UCL	0.0316	95% Bootstrap t UCL 0.0316
95% H-UCL (Log ROS)	0.034	

DL/2 Statistics			
DL/2 Normal	DL/2 Log-Transformed		
Mean in Original Scale	0.0299	Mean in Log Scale	-3.784
SD in Original Scale	0.0189	SD in Log Scale	0.875
95% t UCL (Assumes normality)	0.0315	95% H-Stat UCL	0.0366
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.0316

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***fluorene***86-73-7***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	186
Number of Detects	186	Number of Non-Detects	176
Number of Distinct Detects	170	Number of Distinct Non-Detects	19
Minimum Detect	0.00198	Minimum Non-Detect	0.00181
Maximum Detect	0.06	Maximum Non-Detect	0.00253
Variance Detects	9.89E-05	Percent Non-Detects	48.62%
Mean Detects	0.0103	SD Detects	0.00994
Median Detects	0.00663	CV Detects	0.967
Skewness Detects	2.165	Kurtosis Detects	5.448
Mean of Logged Detects	-4.935	SD of Logged Detects	0.824

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.754	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.202	Lilliefors GOF Test
5% Lilliefors Critical Value	0.065	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0062	Standard Error of Mean	4.35E-04
SD	0.00826	95% KM (BCA) UCL	0.00698
95% KM (t) UCL	0.00692	95% KM (Percentile Bootstrap) UCL	0.00694
95% KM (z) UCL	0.00692	95% KM Bootstrap t UCL	0.00699
90% KM Chebyshev UCL	0.00751	95% KM Chebyshev UCL	0.0081
97.5% KM Chebyshev UCL	0.00892	99% KM Chebyshev UCL	0.0105

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.208	Anderson-Darling GOF Test	
5% A-D Critical Value	0.771	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0685	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.544	k star (bias corrected MLE)	1.522
Theta hat (MLE)	0.00666	Theta star (bias corrected MLE)	0.00676
nu hat (MLE)	574.3	nu star (bias corrected)	566.3
MLE Mean (bias corrected)	0.0103	MLE Sd (bias corrected)	0.00834

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.564	nu hat (KM)	408.7
Approximate Chi Square Value (408.66, α)	362.8	Adjusted Chi Square Value (408.66, β)	362.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.00699	95% Gamma Adjusted KM-UCL (use when n<50)	0.00699

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00198	Mean	0.0101
Maximum	0.06	Median	0.01
SD	0.00712	CV	0.702
k hat (MLE)	2.876	k star (bias corrected MLE)	2.854
Theta hat (MLE)	0.00353	Theta star (bias corrected MLE)	0.00356
nu hat (MLE)	2082	nu star (bias corrected)	2066
MLE Mean (bias corrected)	0.0101	MLE Sd (bias corrected)	0.00601
		Adjusted Level of Significance (β)	0.0493

Approximate Chi Square Value (N/A, α)	1961	Adjusted Chi Square Value (N/A, β)	1961
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0107	95% Gamma Adjusted UCL (use when $n < 50$)	0.0107
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0995	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.065	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00581	Mean in Log Scale	-5.954
SD in Original Scale	0.00849	SD in Log Scale	1.294
95% t UCL (assumes normality of ROS data)	0.00654	95% Percentile Bootstrap UCL	0.00656
95% BCA Bootstrap UCL	0.00663	95% Bootstrap t UCL	0.00664
95% H-UCL (Log ROS)	0.00705		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00583	Mean in Log Scale	-5.836
SD in Original Scale	0.00847	SD in Log Scale	1.1
95% t UCL (Assumes normality)	0.00657	95% H-Stat UCL	0.00608
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00692	95% KM (% Bootstrap) UCL	0.00694
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***indeno(1,2,3-c,d)pyrene***193-39-5***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	186
Number of Detects	211	Number of Non-Detects	151
Number of Distinct Detects	171	Number of Distinct Non-Detects	22
Minimum Detect	0.00188	Minimum Non-Detect	0.00181
Maximum Detect	0.0265	Maximum Non-Detect	0.00267
Variance Detects	9.73E-06	Percent Non-Detects	41.71%
Mean Detects	0.00421	SD Detects	0.00312
Median Detects	0.00322	CV Detects	0.74
Skewness Detects	3.609	Kurtosis Detects	17.61
Mean of Logged Detects	-5.622	SD of Logged Detects	0.498
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.648	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.227	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.061	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00322	Standard Error of Mean	1.40E-04
SD	0.00265	95% KM (BCA) UCL	0.00346
95% KM (t) UCL	0.00345	95% KM (Percentile Bootstrap) UCL	0.00346
95% KM (z) UCL	0.00345	95% KM Bootstrap t UCL	0.00348
90% KM Chebyshev UCL	0.00363	95% KM Chebyshev UCL	0.00382
97.5% KM Chebyshev UCL	0.00409	99% KM Chebyshev UCL	0.00461
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.981	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.162	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0627	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.433	k star (bias corrected MLE)	3.387
Theta hat (MLE)	0.00123	Theta star (bias corrected MLE)	0.00124
nu hat (MLE)	1449	nu star (bias corrected)	1429
MLE Mean (bias corrected)	0.00421	MLE Sd (bias corrected)	0.00229
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.47	nu hat (KM)	1064
Approximate Chi Square Value (N/A, α)	989.7	Adjusted Chi Square Value (N/A, β)	989.5
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00346	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00346

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00188	Mean	0.00663
Maximum	0.0265	Median	0.006
SD	0.00372	CV	0.561
k hat (MLE)	2.912	k star (bias corrected MLE)	2.89
Theta hat (MLE)	0.00228	Theta star (bias corrected MLE)	0.00229
nu hat (MLE)	2108	nu star (bias corrected)	2092
MLE Mean (bias corrected)	0.00663	MLE Sd (bias corrected)	0.0039
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1987	Adjusted Chi Square Value (N/A, β)	1986
95% Gamma Approximate UCL (use when n>=50)	0.00698	95% Gamma Adjusted UCL (use when n<50)	0.00698
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.121	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.061	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00293	Mean in Log Scale	-6.125
SD in Original Scale	0.00283	SD in Log Scale	0.742
95% t UCL (assumes normality of ROS data)	0.00318	95% Percentile Bootstrap UCL	0.00319
95% BCA Bootstrap UCL	0.00321	95% Bootstrap t UCL	0.00322
95% H-UCL (Log ROS)	0.00311		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00286	Mean in Log Scale	-6.171
SD in Original Scale	0.00287	SD in Log Scale	0.755
95% t UCL (Assumes normality)	0.00311	95% H-Stat UCL	0.003
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00345	95% KM (% Bootstrap) UCL	0.00346
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***naphthalene***91-20-3***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	253
Number of Detects	267	Number of Non-Detects	95
Number of Distinct Detects	244	Number of Distinct Non-Detects	14
Minimum Detect	0.00243	Minimum Non-Detect	0.00203
Maximum Detect	0.473	Maximum Non-Detect	0.00273
Variance Detects	0.00243	Percent Non-Detects	26.24%
Mean Detects	0.0221	SD Detects	0.0493
Median Detects	0.00701	CV Detects	2.227
Skewness Detects	6.078	Kurtosis Detects	46.34
Mean of Logged Detects	-4.663	SD of Logged Detects	1.127
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.415	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.345	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0542	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0168	Standard Error of Mean	0.00227
SD	0.0431	95% KM (BCA) UCL	0.0213
95% KM (t) UCL	0.0206	95% KM (Percentile Bootstrap) UCL	0.0207
95% KM (z) UCL	0.0206	95% KM Bootstrap t UCL	0.022
90% KM Chebyshev UCL	0.0237	95% KM Chebyshev UCL	0.0268
97.5% KM Chebyshev UCL	0.031	99% KM Chebyshev UCL	0.0395
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	18.93	Anderson-Darling GOF Test	
5% A-D Critical Value	0.801	Detected Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.207	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0583	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.709	k star (bias corrected MLE)	0.703
Theta hat (MLE)	0.0312	Theta star (bias corrected MLE)	0.0314
nu hat (MLE)	378.5	nu star (bias corrected)	375.6
MLE Mean (bias corrected)	0.0221	MLE Sd (bias corrected)	0.0264
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.153	nu hat (KM)	110.4
Approximate Chi Square Value (110.45, α)	87.19	Adjusted Chi Square Value (110.45, β)	87.11
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0213	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0214
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00243	Mean	0.0189
Maximum	0.473	Median	0.01
SD	0.0426	CV	2.251
k hat (MLE)	0.863	k star (bias corrected MLE)	0.858
Theta hat (MLE)	0.0219	Theta star (bias corrected MLE)	0.0221
nu hat (MLE)	624.9	nu star (bias corrected)	621.1
MLE Mean (bias corrected)	0.0189	MLE Sd (bias corrected)	0.0204
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (621.09, α)	564.3	Adjusted Chi Square Value (621.09, β)	564.1
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0208	95% Gamma Adjusted UCL (use when $n < 50$)	0.0209
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.12	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0542	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0165	Mean in Log Scale	-5.334
SD in Original Scale	0.0433	SD in Log Scale	1.516
95% t UCL (assumes normality of ROS data)	0.0203	95% Percentile Bootstrap UCL	0.0207
95% BCA Bootstrap UCL	0.0212	95% Bootstrap t UCL	0.0217
95% H-UCL (Log ROS)	0.0187		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0166	Mean in Log Scale	-5.2
SD in Original Scale	0.0433	SD in Log Scale	1.323
95% t UCL (Assumes normality)	0.0204	95% H-Stat UCL	0.0157
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.0268		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***naphthobenzothiophene***nbt***ug/l***t)			
General Statistics			
Total Number of Observations	27	Number of Distinct Observations	23
Number of Detects	18	Number of Non-Detects	9
Number of Distinct Detects	18	Number of Distinct Non-Detects	5
Minimum Detect	0.00176	Minimum Non-Detect	0.00167
Maximum Detect	0.014	Maximum Non-Detect	0.00178
Variance Detects	9.29E-06	Percent Non-Detects	33.33%
Mean Detects	0.00503	SD Detects	0.00305
Median Detects	0.00419	CV Detects	0.606
Skewness Detects	2	Kurtosis Detects	4.062
Mean of Logged Detects	-5.423	SD of Logged Detects	0.5
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.775	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.241	Lilliefors GOF Test	

5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00391	Standard Error of Mean	5.72E-04
SD	0.00289	95% KM (BCA) UCL	0.00494
95% KM (t) UCL	0.00489	95% KM (Percentile Bootstrap) UCL	0.0049
95% KM (z) UCL	0.00485	95% KM Bootstrap t UCL	0.00546
90% KM Chebyshev UCL	0.00563	95% KM Chebyshev UCL	0.00641
97.5% KM Chebyshev UCL	0.00748	99% KM Chebyshev UCL	0.00961
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.731	Anderson-Darling GOF Test	
5% A-D Critical Value	0.743	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.178	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.205	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.991	k star (bias corrected MLE)	3.363
Theta hat (MLE)	0.00126	Theta star (bias corrected MLE)	0.0015
nu hat (MLE)	143.7	nu star (bias corrected)	121.1
MLE Mean (bias corrected)	0.00503	MLE Sd (bias corrected)	0.00274
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.831	nu hat (KM)	98.87
Approximate Chi Square Value (98.87, α)	76.93	Adjusted Chi Square Value (98.87, β)	75.69
95% Gamma Approximate KM-UCL (use when n>=50)	0.00503	95% Gamma Adjusted KM-UCL (use when n<50)	0.00511
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00176	Mean	0.00669
Maximum	0.014	Median	0.00531
SD	0.00343	CV	0.513
k hat (MLE)	3.663	k star (bias corrected MLE)	3.281
Theta hat (MLE)	0.00183	Theta star (bias corrected MLE)	0.00204
nu hat (MLE)	197.8	nu star (bias corrected)	177.2
MLE Mean (bias corrected)	0.00669	MLE Sd (bias corrected)	0.00369
		Adjusted Level of Significance (β)	0.0401
Approximate Chi Square Value (177.16, α)	147.4	Adjusted Chi Square Value (177.16, β)	145.6
95% Gamma Approximate UCL (use when n>=50)	0.00804	95% Gamma Adjusted UCL (use when n<50)	0.00813
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.142	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00381	Mean in Log Scale	-5.818
SD in Original Scale	0.00303	SD in Log Scale	0.707
95% t UCL (assumes normality of ROS data)	0.0048	95% Percentile Bootstrap UCL	0.00477
95% BCA Bootstrap UCL	0.00496	95% Bootstrap t UCL	0.00529
95% H-UCL (Log ROS)	0.00515		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.746	95% H-UCL (KM -Log)	0.0049
KM SD (logged)	0.605	95% Critical H Value (KM-Log)	2.067
KM Standard Error of Mean (logged)	0.12		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00364	Mean in Log Scale	-5.965
SD in Original Scale	0.00317	SD in Log Scale	0.88
95% t UCL (Assumes normality)	0.00468	95% H-Stat UCL	0.00569
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Percentile Bootstrap) UCL	0.0049	95% GROS Adjusted Gamma UCL	0.00813
95% Adjusted Gamma KM-UCL	0.00511		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			

Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***perylene***198-55-0***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	63
Number of Detects	43	Number of Non-Detects	319
Number of Distinct Detects	41	Number of Distinct Non-Detects	28
Minimum Detect	0.00205	Minimum Non-Detect	0.00183
Maximum Detect	0.0121	Maximum Non-Detect	0.00339
Variance Detects	4.63E-06	Percent Non-Detects	88.12%
Mean Detects	0.0047	SD Detects	0.00215
Median Detects	0.00444	CV Detects	0.458
Skewness Detects	1.783	Kurtosis Detects	3.609
Mean of Logged Detects	-5.444	SD of Logged Detects	0.397
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.829	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.208	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.135	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00226	Standard Error of Mean	7.40E-05
SD	0.00118	95% KM (BCA) UCL	0.00239
95% KM (t) UCL	0.00238	95% KM (Percentile Bootstrap) UCL	0.00239
95% KM (z) UCL	0.00238	95% KM Bootstrap t UCL	0.0024
90% KM Chebyshev UCL	0.00248	95% KM Chebyshev UCL	0.00258
97.5% KM Chebyshev UCL	0.00272	99% KM Chebyshev UCL	0.003
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.95	Anderson-Darling GOF Test	
5% A-D Critical Value	0.751	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.15	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.135	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.204	k star (bias corrected MLE)	5.786
Theta hat (MLE)	7.57E-04	Theta star (bias corrected MLE)	8.11E-04
nu hat (MLE)	533.5	nu star (bias corrected)	497.6
MLE Mean (bias corrected)	0.0047	MLE Sd (bias corrected)	0.00195
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.679	nu hat (KM)	2663
Approximate Chi Square Value (N/A, α)	2545	Adjusted Chi Square Value (N/A, β)	2544
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00236	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00237
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00205	Mean	0.00937
Maximum	0.0121	Median	0.01
SD	0.00187	CV	0.199
k hat (MLE)	14.64	k star (bias corrected MLE)	14.52
Theta hat (MLE)	6.40E-04	Theta star (bias corrected MLE)	6.45E-04
nu hat (MLE)	10597	nu star (bias corrected)	10511
MLE Mean (bias corrected)	0.00937	MLE Sd (bias corrected)	0.00246
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	10273	Adjusted Chi Square Value (N/A, β)	10272
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00959	95% Gamma Adjusted UCL (use when $n < 50$)	0.00959
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.96	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.135	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0015	Mean in Log Scale	-6.845
SD in Original Scale	0.00151	SD in Log Scale	0.808
95% t UCL (assumes normality of ROS data)	0.00163	95% Percentile Bootstrap UCL	0.00163
95% BCA Bootstrap UCL	0.00165	95% Bootstrap t UCL	0.00165

95% H-UCL (Log ROS)	0.00161		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-6.16	95% H-UCL (KM -Log)	0.00228
KM SD (logged)	0.312	95% Critical H Value (KM-Log)	1.716
KM Standard Error of Mean (logged)	0.0248		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00187	Mean in Log Scale	-6.385
SD in Original Scale	0.00128	SD in Log Scale	0.385
95% t UCL (Assumes normality)	0.00198	95% H-Stat UCL	0.00188
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00238	95% KM (% Bootstrap) UCL	0.00239
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***phenanthrene***85-01-8***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	253
Number of Detects	289	Number of Non-Detects	73
Number of Distinct Detects	245	Number of Distinct Non-Detects	13
Minimum Detect	0.00243	Minimum Non-Detect	0.00128
Maximum Detect	0.218	Maximum Non-Detect	0.00267
Variance Detects	3.51E-04	Percent Non-Detects	20.17%
Mean Detects	0.0126	SD Detects	0.0187
Median Detects	0.0065	CV Detects	1.491
Skewness Detects	5.849	Kurtosis Detects	52.5
Mean of Logged Detects	-4.857	SD of Logged Detects	0.876
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.533	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.294	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0521	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0103	Standard Error of Mean	9.11E-04
SD	0.0173	95% KM (BCA) UCL	0.0119
95% KM (t) UCL	0.0118	95% KM (Percentile Bootstrap) UCL	0.012
95% KM (z) UCL	0.0118	95% KM Bootstrap t UCL	0.0123
90% KM Chebyshev UCL	0.013	95% KM Chebyshev UCL	0.0143
97.5% KM Chebyshev UCL	0.016	99% KM Chebyshev UCL	0.0194
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	14.04	Anderson-Darling GOF Test	
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.167	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0548	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.181	k star (bias corrected MLE)	1.171
Theta hat (MLE)	0.0106	Theta star (bias corrected MLE)	0.0107
nu hat (MLE)	682.4	nu star (bias corrected)	676.6
MLE Mean (bias corrected)	0.0126	MLE Sd (bias corrected)	0.0116
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.354	nu hat (KM)	256.4
Approximate Chi Square Value (256.42, α)	220.3	Adjusted Chi Square Value (256.42, β)	220.2
95% Gamma Approximate KM-UCL (use when n>=50)	0.012	95% Gamma Adjusted KM-UCL (use when n<50)	0.012
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00243	Mean	0.012
Maximum	0.218	Median	0.00842

SD	0.0168	CV	1.392
k hat (MLE)	1.435	k star (bias corrected MLE)	1.425
Theta hat (MLE)	0.00839	Theta star (bias corrected MLE)	0.00845
nu hat (MLE)	1039	nu star (bias corrected)	1032
MLE Mean (bias corrected)	0.012	MLE Sd (bias corrected)	0.0101
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	958.3	Adjusted Chi Square Value (N/A, β)	958
95% Gamma Approximate UCL (use when n>=50)	0.013	95% Gamma Adjusted UCL (use when n<50)	0.013

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.0957 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0521 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0103	Mean in Log Scale	-5.251
SD in Original Scale	0.0173	SD in Log Scale	1.123
95% t UCL (assumes normality of ROS data)	0.0118	95% Percentile Bootstrap UCL	0.0119
95% BCA Bootstrap UCL	0.0122	95% Bootstrap t UCL	0.0122
95% H-UCL (Log ROS)	0.0112		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0103	Mean in Log Scale	-5.232
SD in Original Scale	0.0173	SD in Log Scale	1.084
95% t UCL (Assumes normality)	0.0118	95% H-Stat UCL	0.0109
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	0.0119		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***pyrene***129-00-0***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	286
Number of Detects	351	Number of Non-Detects	11
Number of Distinct Detects	282	Number of Distinct Non-Detects	4
Minimum Detect	0.00218	Minimum Non-Detect	9.00E-04
Maximum Detect	0.156	Maximum Non-Detect	0.001
Variance Detects	5.25E-04	Percent Non-Detects	3.04%
Mean Detects	0.0379	SD Detects	0.0229
Median Detects	0.0347	CV Detects	0.605
Skewness Detects	1.843	Kurtosis Detects	6.447
Mean of Logged Detects	-3.461	SD of Logged Detects	0.669

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.872	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.0929	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0473	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0368	Standard Error of Mean	0.00123
SD	0.0234	95% KM (BCA) UCL	0.0389
95% KM (t) UCL	0.0388	95% KM (Percentile Bootstrap) UCL	0.0388
95% KM (z) UCL	0.0388	95% KM Bootstrap t UCL	0.0389
90% KM Chebyshev UCL	0.0405	95% KM Chebyshev UCL	0.0421
97.5% KM Chebyshev UCL	0.0445	99% KM Chebyshev UCL	0.049

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.384	Anderson-Darling GOF Test
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0563	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.049	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.817	k star (bias corrected MLE)	2.795
Theta hat (MLE)	0.0134	Theta star (bias corrected MLE)	0.0136
nu hat (MLE)	1978	nu star (bias corrected)	1962

MLE Mean (bias corrected)	0.0379	MLE Sd (bias corrected)	0.0227
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.466	nu hat (KM)	1786
Approximate Chi Square Value (N/A, α)	1688	Adjusted Chi Square Value (N/A, β)	1688
95% Gamma Approximate KM-UCL (use when n>=50)	0.0389	95% Gamma Adjusted KM-UCL (use when n<50)	0.0389

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00218	Mean	0.037
Maximum	0.156	Median	0.0342
SD	0.0231	CV	0.623
k hat (MLE)	2.655	k star (bias corrected MLE)	2.635
Theta hat (MLE)	0.014	Theta star (bias corrected MLE)	0.0141
nu hat (MLE)	1922	nu star (bias corrected)	1907
MLE Mean (bias corrected)	0.037	MLE Sd (bias corrected)	0.0228
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1807	Adjusted Chi Square Value (N/A, β)	1807
95% Gamma Approximate UCL (use when n>=50)	0.0391	95% Gamma Adjusted UCL (use when n<50)	0.0391

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.085 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0473 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0369	Mean in Log Scale	-3.509
SD in Original Scale	0.0232	SD in Log Scale	0.712
95% t UCL (assumes normality of ROS data)	0.0389	95% Percentile Bootstrap UCL	0.039
95% BCA Bootstrap UCL	0.0391	95% Bootstrap t UCL	0.0391
95% H-UCL (Log ROS)	0.0415		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0368	Mean in Log Scale	-3.589
SD in Original Scale	0.0235	SD in Log Scale	0.98
95% t UCL (Assumes normality)	0.0388	95% H-Stat UCL	0.0498
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	0.0389		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***retene***483-65-8***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	53
Number of Detects	28	Number of Non-Detects	334
Number of Distinct Detects	27	Number of Distinct Non-Detects	30
Minimum Detect	0.00233	Minimum Non-Detect	0.00226
Maximum Detect	0.107	Maximum Non-Detect	0.00304
Variance Detects	3.90E-04	Percent Non-Detects	92.27%
Mean Detects	0.00991	SD Detects	0.0198
Median Detects	0.00438	CV Detects	1.995
Skewness Detects	4.734	Kurtosis Detects	23.65
Mean of Logged Detects	-5.186	SD of Logged Detects	0.85

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.376 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.924 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.351 Lilliefors GOF Test
5% Lilliefors Critical Value	0.167 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00285	Standard Error of Mean	3.09E-04
SD	0.00577	95% KM (BCA) UCL	0.00342
95% KM (t) UCL	0.00336	95% KM (Percentile Bootstrap) UCL	0.00343
95% KM (z) UCL	0.00336	95% KM Bootstrap t UCL	0.00479

90% KM Chebyshev UCL	0.00378	95% KM Chebyshev UCL	0.0042
97.5% KM Chebyshev UCL	0.00478	99% KM Chebyshev UCL	0.00592

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.967	Anderson-Darling GOF Test	
5% A-D Critical Value	0.774	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.253	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.17	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	1.009	k star (bias corrected MLE)	0.924
Theta hat (MLE)	0.00982	Theta star (bias corrected MLE)	0.0107
nu hat (MLE)	56.48	nu star (bias corrected)	51.76
MLE Mean (bias corrected)	0.00991	MLE Sd (bias corrected)	0.0103

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.244	nu hat (KM)	176.9
Approximate Chi Square Value (176.93, α)	147.2	Adjusted Chi Square Value (176.93, β)	147.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.00343	95% Gamma Adjusted KM-UCL (use when n<50)	0.00343

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.00233	Mean	0.00999
Maximum	0.107	Median	0.01
SD	0.0054	CV	0.541
k hat (MLE)	11.47	k star (bias corrected MLE)	11.38
Theta hat (MLE)	8.71E-04	Theta star (bias corrected MLE)	8.78E-04
nu hat (MLE)	8304	nu star (bias corrected)	8236
MLE Mean (bias corrected)	0.00999	MLE Sd (bias corrected)	0.00296
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	8026	Adjusted Chi Square Value (N/A, β)	8025
95% Gamma Approximate UCL (use when n>=50)	0.0103	95% Gamma Adjusted UCL (use when n<50)	0.0103

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.834	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.17	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	9.37E-04	Mean in Log Scale	-9.464
SD in Original Scale	0.006	SD in Log Scale	2.127
95% t UCL (assumes normality of ROS data)	0.00146	95% Percentile Bootstrap UCL	0.00152
95% BCA Bootstrap UCL	0.00198	95% Bootstrap t UCL	0.0025
95% H-UCL (Log ROS)	0.00107		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00188	Mean in Log Scale	-6.607
SD in Original Scale	0.00588	SD in Log Scale	0.477
95% t UCL (Assumes normality)	0.00239	95% H-Stat UCL	0.00158
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.00336	95% KM (% Bootstrap) UCL	0.00343
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***total cpah teq (epa 1993) (km) (mdl)***tcpahtef7ma_km_mdl***ug/l****)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	349
Number of Detects	200	Number of Non-Detects	162
Number of Distinct Detects	199	Number of Distinct Non-Detects	150
Minimum Detect	2.48E-06	Minimum Non-Detect	0.00389
Maximum Detect	0.0665	Maximum Non-Detect	0.00835
Variance Detects	9.42E-05	Percent Non-Detects	44.75%
Mean Detects	0.00807	SD Detects	0.00971

Median Detects	0.00712	CV Detects	1.202
Skewness Detects	2.939	Kurtosis Detects	12.26
Mean of Logged Detects	-5.985	SD of Logged Detects	2.105
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.712	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.203	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0626	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00464	Standard Error of Mean	4.33E-04
SD	0.00817	95% KM (BCA) UCL	0.00539
95% KM (t) UCL	0.00536	95% KM (Percentile Bootstrap) UCL	0.00537
95% KM (z) UCL	0.00536	95% KM Bootstrap t UCL	0.00547
90% KM Chebyshev UCL	0.00594	95% KM Chebyshev UCL	0.00653
97.5% KM Chebyshev UCL	0.00735	99% KM Chebyshev UCL	0.00895
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.24	Anderson-Darling GOF Test	
5% A-D Critical Value	0.817	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.24	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0671	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.539	k star (bias corrected MLE)	0.534
Theta hat (MLE)	0.015	Theta star (bias corrected MLE)	0.0151
nu hat (MLE)	215.5	nu star (bias corrected)	213.6
MLE Mean (bias corrected)	0.00807	MLE Sd (bias corrected)	0.011
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.323	nu hat (KM)	233.9
Approximate Chi Square Value (233.92, α)	199.5	Adjusted Chi Square Value (233.92, β)	199.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.00544	95% Gamma Adjusted KM-UCL (use when n<50)	0.00545
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.48E-06	Mean	0.00894
Maximum	0.0665	Median	0.01
SD	0.00727	CV	0.814
k hat (MLE)	0.9	k star (bias corrected MLE)	0.894
Theta hat (MLE)	0.00993	Theta star (bias corrected MLE)	0.00999
nu hat (MLE)	651.4	nu star (bias corrected)	647.4
MLE Mean (bias corrected)	0.00894	MLE Sd (bias corrected)	0.00945
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (647.36, α)	589.3	Adjusted Chi Square Value (647.36, β)	589.1
95% Gamma Approximate UCL (use when n>=50)	0.00982	95% Gamma Adjusted UCL (use when n<50)	0.00982
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.302	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0626	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00463	Mean in Log Scale	-6.851
SD in Original Scale	0.00816	SD in Log Scale	1.847
95% t UCL (assumes normality of ROS data)	0.00534	95% Percentile Bootstrap UCL	0.00539
95% BCA Bootstrap UCL	0.00548	95% Bootstrap t UCL	0.00539
95% H-UCL (Log ROS)	0.00775		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00567	Mean in Log Scale	-5.956
SD in Original Scale	0.00769	SD in Log Scale	1.565
95% t UCL (Assumes normality)	0.00634	95% H-Stat UCL	0.011
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	0.00735		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***total hpah (10 of 17) (km) (mdl)***tpah_17_hm_km_mdl***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	355
Number of Detects	347	Number of Non-Detects	15
Number of Distinct Detects	346	Number of Distinct Non-Detects	9
Minimum Detect	2.18E-03	Minimum Non-Detect	0.00425
Maximum Detect	0.604	Maximum Non-Detect	0.0298
Variance Detects	4.26E-03	Percent Non-Detects	4.14%
Mean Detects	0.107	SD Detects	0.0653
Median Detects	0.0965	CV Detects	0.611
Skewness Detects	3.411	Kurtosis Detects	18.69
Mean of Logged Detects	-2.374	SD of Logged Detects	0.536
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.75	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.158	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0476	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.102	Standard Error of Mean	3.53E-03
SD	0.0671	95% KM (BCA) UCL	0.109
95% KM (t) UCL	0.108	95% KM (Percentile Bootstrap) UCL	0.109
95% KM (z) UCL	0.108	95% KM Bootstrap t UCL	0.109
90% KM Chebyshev UCL	0.113	95% KM Chebyshev UCL	0.118
97.5% KM Chebyshev UCL	0.125	99% KM Chebyshev UCL	0.138
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.158	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0833	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0491	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.796	k star (bias corrected MLE)	3.765
Theta hat (MLE)	0.0281	Theta star (bias corrected MLE)	0.0284
nu hat (MLE)	2634	nu star (bias corrected)	2613
MLE Mean (bias corrected)	0.107	MLE Sd (bias corrected)	0.055
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.33	nu hat (KM)	1687
Approximate Chi Square Value (N/A, α)	1592	Adjusted Chi Square Value (N/A, β)	1592
95% Gamma Approximate KM-UCL (use when n>=50)	0.109	95% Gamma Adjusted KM-UCL (use when n<50)	0.109
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.18E-03	Mean	0.103
Maximum	0.604	Median	0.0939
SD	0.0667	CV	0.648
k hat (MLE)	2.836	k star (bias corrected MLE)	2.815
Theta hat (MLE)	0.0363	Theta star (bias corrected MLE)	0.0365
nu hat (MLE)	2053	nu star (bias corrected)	2038
MLE Mean (bias corrected)	0.103	MLE Sd (bias corrected)	0.0613
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1934	Adjusted Chi Square Value (N/A, β)	1933
95% Gamma Approximate UCL (use when n>=50)	0.108	95% Gamma Adjusted UCL (use when n<50)	0.108
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.069	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0476	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.104	Mean in Log Scale	-2.424
SD in Original Scale	0.0658	SD in Log Scale	0.577
95% t UCL (assumes normality of ROS data)	0.109	95% Percentile Bootstrap UCL	0.11
95% BCA Bootstrap UCL	0.11	95% Bootstrap t UCL	0.11
95% H-UCL (Log ROS)	0.111		

DL/2 Statistics			
DL/2 Normal	DL/2 Log-Transformed		
Mean in Original Scale	0.103	Mean in Log Scale	-2.507
SD in Original Scale	0.0671	SD in Log Scale	0.842
95% t UCL (Assumes normality)	0.108	95% H-Stat UCL	0.127
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.109

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***total lpah (7 of 17) (km) (mdl)***tpah_17_lm_km_mdl***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	356
Number of Detects	347	Number of Non-Detects	15
Number of Distinct Detects	345	Number of Distinct Non-Detects	11
Minimum Detect	0.00134	Minimum Non-Detect	0.00238
Maximum Detect	0.865	Maximum Non-Detect	0.0177
Variance Detects	0.0111	Percent Non-Detects	4.14%
Mean Detects	0.0761	SD Detects	0.105
Median Detects	0.0395	CV Detects	1.382
Skewness Detects	3.788	Kurtosis Detects	19.4
Mean of Logged Detects	-3.199	SD of Logged Detects	1.166

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.62	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.239	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0476	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0731	Standard Error of Mean	0.00547
SD	0.104	95% KM (BCA) UCL	0.0821
95% KM (t) UCL	0.0821	95% KM (Percentile Bootstrap) UCL	0.0818
95% KM (z) UCL	0.0821	95% KM Bootstrap t UCL	0.0837
90% KM Chebyshev UCL	0.0895	95% KM Chebyshev UCL	0.097
97.5% KM Chebyshev UCL	0.107	99% KM Chebyshev UCL	0.128

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	5.872	Anderson-Darling GOF Test
5% A-D Critical Value	0.788	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.109	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0504	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.933	k star (bias corrected MLE)	0.926
Theta hat (MLE)	0.0816	Theta star (bias corrected MLE)	0.0822
nu hat (MLE)	647.2	nu star (bias corrected)	642.9
MLE Mean (bias corrected)	0.0761	MLE Sd (bias corrected)	0.0791

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.495	nu hat (KM)	358.5
Approximate Chi Square Value (358.51, α)	315.6	Adjusted Chi Square Value (358.51, β)	315.5
95% Gamma Approximate KM-UCL (use when n>=50)	0.0831	95% Gamma Adjusted KM-UCL (use when n<50)	0.0831

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00134	Mean	0.0734
Maximum	0.865	Median	0.0357
SD	0.104	CV	1.415
k hat (MLE)	0.905	k star (bias corrected MLE)	0.899
Theta hat (MLE)	0.0811	Theta star (bias corrected MLE)	0.0816
nu hat (MLE)	655	nu star (bias corrected)	650.9
MLE Mean (bias corrected)	0.0734	MLE Sd (bias corrected)	0.0774
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (650.93, α)	592.7	Adjusted Chi Square Value (650.93, β)	592.5

95% Gamma Approximate UCL (use when n>=50)	0.0806	95% Gamma Adjusted UCL (use when n<50)	0.0806
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0805	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0476	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0732	Mean in Log Scale	-3.291
SD in Original Scale	0.104	SD in Log Scale	1.226
95% t UCL (assumes normality of ROS data)	0.0822	95% Percentile Bootstrap UCL	0.0821
95% BCA Bootstrap UCL	0.0834	95% Bootstrap t UCL	0.0842
95% H-UCL (Log ROS)	0.0916		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0731	Mean in Log Scale	-3.316
SD in Original Scale	0.104	SD in Log Scale	1.283
95% t UCL (Assumes normality)	0.0821	95% H-Stat UCL	0.0971
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.097		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (polycyclic aromatic hydrocarbons (ug/l)***total pah (17) (km) (mdl)***tpah_17_km_mdl***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	361
Number of Detects	351	Number of Non-Detects	11
Number of Distinct Detects	351	Number of Distinct Non-Detects	10
Minimum Detect	0.00134	Minimum Non-Detect	0.00425
Maximum Detect	1.163	Maximum Non-Detect	0.387
Variance Detects	0.0194	Percent Non-Detects	3.04%
Mean Detects	0.177	SD Detects	0.139
Median Detects	0.145	CV Detects	0.784
Skewness Detects	3.271	Kurtosis Detects	15.41
Mean of Logged Detects	-1.975	SD of Logged Detects	0.823
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.715	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0473	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.175	Standard Error of Mean	0.00729
SD	0.138	95% KM (BCA) UCL	0.187
95% KM (t) UCL	0.187	95% KM (Percentile Bootstrap) UCL	0.187
95% KM (z) UCL	0.187	95% KM Bootstrap t UCL	0.189
90% KM Chebyshev UCL	0.196	95% KM Chebyshev UCL	0.206
97.5% KM Chebyshev UCL	0.22	99% KM Chebyshev UCL	0.247
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.393	Anderson-Darling GOF Test	
5% A-D Critical Value	0.765	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.107	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0491	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.182	k star (bias corrected MLE)	2.165
Theta hat (MLE)	0.0813	Theta star (bias corrected MLE)	0.082
nu hat (MLE)	1532	nu star (bias corrected)	1520
MLE Mean (bias corrected)	0.177	MLE Sd (bias corrected)	0.121
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.591	nu hat (KM)	1152
Approximate Chi Square Value (N/A, α)	1074	Adjusted Chi Square Value (N/A, β)	1074
95% Gamma Approximate KM-UCL (use when n>=50)	0.187	95% Gamma Adjusted KM-UCL (use when n<50)	0.187

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00134	Mean 0.174
Maximum	1.163	Median 0.141
SD	0.139	CV 0.795
k hat (MLE)	2.083	k star (bias corrected MLE) 2.068
Theta hat (MLE)	0.0837	Theta star (bias corrected MLE) 0.0843
nu hat (MLE)	1508	nu star (bias corrected) 1497
MLE Mean (bias corrected)	0.174	MLE Sd (bias corrected) 0.121
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1408	Adjusted Chi Square Value (N/A, β) 1408
95% Gamma Approximate UCL (use when n>=50)	0.185	95% Gamma Adjusted UCL (use when n<50) 0.185
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.135	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0473	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.174	Mean in Log Scale -1.997
SD in Original Scale	0.138	SD in Log Scale 0.826
95% t UCL (assumes normality of ROS data)	0.186	95% Percentile Bootstrap UCL 0.187
95% BCA Bootstrap UCL	0.188	95% Bootstrap t UCL 0.188
95% H-UCL (Log ROS)	0.208	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.174	Mean in Log Scale -2.013
SD in Original Scale	0.139	SD in Log Scale 0.876
95% t UCL (Assumes normality)	0.186	95% H-Stat UCL 0.215
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.187	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (semivolatile organics (ug/l)***2,4-dinitrotoluene***121-14-2***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 20
Number of Detects	4	Number of Non-Detects 358
Number of Distinct Detects	4	Number of Distinct Non-Detects 16
Minimum Detect	0.56	Minimum Non-Detect 0.028
Maximum Detect	1.8	Maximum Non-Detect 0.1
Variance Detects	0.393	Percent Non-Detects 98.90%
Mean Detects	1.118	SD Detects 0.627
Median Detects	1.055	CV Detects 0.561
Skewness Detects	0.189	Kurtosis Detects -4.86
Mean of Logged Detects	-0.0202	SD of Logged Detects 0.602
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.849	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.291	Lilliefors GOF Test
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.04	Standard Error of Mean 0.00773
SD	0.127	95% KM (BCA) UCL N/A
95% KM (t) UCL	0.0528	95% KM (Percentile Bootstrap) UCL N/A
95% KM (z) UCL	0.0528	95% KM Bootstrap t UCL N/A
90% KM Chebyshev UCL	0.0632	95% KM Chebyshev UCL 0.0737
97.5% KM Chebyshev UCL	0.0883	99% KM Chebyshev UCL 0.117
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.499	Anderson-Darling GOF Test
5% A-D Critical Value	0.659	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.321	Kolmogrov-Smirnoff GOF

5% K-S Critical Value 0.396 Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only
k hat (MLE) 3.967 k star (bias corrected MLE) 1.158
Theta hat (MLE) 0.282 Theta star (bias corrected MLE) 0.965
nu hat (MLE) 31.73 nu star (bias corrected) 9.267
MLE Mean (bias corrected) 1.118 MLE Sd (bias corrected) 1.038

Gamma Kaplan-Meier (KM) Statistics
k hat (KM) 0.0988 nu hat (KM) 71.5
Approximate Chi Square Value (71.50, α) 53.03 Adjusted Chi Square Value (71.50, β) 52.97
95% Gamma Approximate KM-UCL (use when $n \geq 50$) 0.054 95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.054
Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates
Minimum 0.01 Mean 0.0222
Maximum 1.8 Median 0.01
SD 0.129 CV 5.813
k hat (MLE) 0.794 k star (bias corrected MLE) 0.789
Theta hat (MLE) 0.028 Theta star (bias corrected MLE) 0.0282
nu hat (MLE) 574.6 nu star (bias corrected) 571.2
MLE Mean (bias corrected) 0.0222 MLE Sd (bias corrected) 0.025
Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (571.21, α) 516.8 Adjusted Chi Square Value (571.21, β) 516.6
95% Gamma Approximate UCL (use when $n \geq 50$) 0.0246 95% Gamma Adjusted UCL (use when $n < 50$) N/A

Lognormal GOF Test on Detected Observations Only
Shapiro Wilk Test Statistic 0.835 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value 0.748 Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic 0.284 Lilliefors GOF Test
5% Lilliefors Critical Value 0.443 Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects
Mean in Original Scale 0.0211 Mean in Log Scale -7.021
SD in Original Scale 0.132 SD in Log Scale 2.533
95% t UCL (assumes normality of ROS data) 0.0326 95% Percentile Bootstrap UCL 0.0336
95% BCA Bootstrap UCL 0.0396 95% Bootstrap t UCL 0.0498
95% H-UCL (Log ROS) 0.036

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed
KM Mean (logged) -3.536 95% H-UCL (KM -Log) 0.0323
KM SD (logged) 0.376 95% Critical H Value (KM-Log) 1.74
KM Standard Error of Mean (logged) 0.0228

DL/2 Statistics
DL/2 Normal DL/2 Log-Transformed
Mean in Original Scale 0.0374 Mean in Log Scale -3.644
SD in Original Scale 0.128 SD in Log Scale 0.419
95% t UCL (Assumes normality) 0.0485 95% H-Stat UCL 0.0297
DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use
95% KM (t) UCL 0.0528 95% KM (Percentile Bootstrap) UCL N/A
Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***3-methylphenol & 4-methylphenol (m&p-cresol)***meph3_4***ug/l***t)

General Statistics
Total Number of Observations 362 Number of Distinct Observations 31
Number of Detects 11 Number of Non-Detects 351
Number of Distinct Detects 11 Number of Distinct Non-Detects 20
Minimum Detect 1.1 Minimum Non-Detect 0.036
Maximum Detect 56.6 Maximum Non-Detect 0.1
Variance Detects 251.7 Percent Non-Detects 96.96%
Mean Detects 11.48 SD Detects 15.87

Median Detects	5.7	CV Detects	1.382
Skewness Detects	2.705	Kurtosis Detects	792.70%
Mean of Logged Detects	1.834	SD of Logged Detects	1.129
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.636	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.28	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.384	Standard Error of Mean	0.181
SD	3.288	95% KM (BCA) UCL	0.703
95% KM (t) UCL	0.683	95% KM (Percentile Bootstrap) UCL	0.714
95% KM (z) UCL	0.682	95% KM Bootstrap t UCL	1.21
90% KM Chebyshev UCL	0.928	95% KM Chebyshev UCL	1.174
97.5% KM Chebyshev UCL	1.516	99% KM Chebyshev UCL	2.187
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.444	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.211	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.263	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.957	k star (bias corrected MLE)	0.756
Theta hat (MLE)	12	Theta star (bias corrected MLE)	15.18
nu hat (MLE)	21.05	nu star (bias corrected)	16.64
MLE Mean (bias corrected)	11.48	MLE Sd (bias corrected)	13.2
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0136	nu hat (KM)	9.863
Approximate Chi Square Value (9.86, α)	3.856	Adjusted Chi Square Value (9.86, β)	3.841
95% Gamma Approximate KM-UCL (use when n>=50)	0.982	95% Gamma Adjusted KM-UCL (use when n<50)	0.985
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.359
Maximum	56.6	Median	0.01
SD	3.296	CV	9.19
k hat (MLE)	0.215	k star (bias corrected MLE)	0.215
Theta hat (MLE)	1.668	Theta star (bias corrected MLE)	1.667
nu hat (MLE)	155.7	nu star (bias corrected)	155.7
MLE Mean (bias corrected)	0.359	MLE Sd (bias corrected)	0.773
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (155.72, α)	127.9	Adjusted Chi Square Value (155.72, β)	127.8
95% Gamma Approximate UCL (use when n>=50)	0.437	95% Gamma Adjusted UCL (use when n<50)	0.437
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.976	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.14	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.377	Mean in Log Scale	-6.907
SD in Original Scale	3.295	SD in Log Scale	3.62
95% t UCL (assumes normality of ROS data)	0.663	95% Percentile Bootstrap UCL	0.678
95% BCA Bootstrap UCL	0.873	95% Bootstrap t UCL	1.205
95% H-UCL (Log ROS)	1.832		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-3.167	95% H-UCL (KM -Log)	0.0699
KM SD (logged)	0.905	95% Critical H Value (KM-Log)	2.052
KM Standard Error of Mean (logged)	0.0499		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.39	Mean in Log Scale	-3.035
SD in Original Scale	3.292	SD in Log Scale	0.911
95% t UCL (Assumes normality)	0.675	95% H-Stat UCL	0.0803
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.683	95% GROS Approximate Gamma UCL	0.437
95% Approximate Gamma KM-UCL	0.982		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***acetophenone***98-86-2***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	29
Number of Detects	8	Number of Non-Detects	354
Number of Distinct Detects	7	Number of Distinct Non-Detects	26
Minimum Detect	0.091	Minimum Non-Detect	0.075
Maximum Detect	0.25	Maximum Non-Detect	0.15
Variance Detects	0.0027	Percent Non-Detects	97.79%
Mean Detects	0.13	SD Detects	0.0519
Median Detects	0.115	CV Detects	39.80%
Skewness Detects	2.149	Kurtosis Detects	4.98
Mean of Logged Detects	-2.091	SD of Logged Detects	0.327

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.739	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0763	Standard Error of Mean	6.16E-04
SD	0.0109	95% KM (BCA) UCL	0.0775
95% KM (t) UCL	0.0773	95% KM (Percentile Bootstrap) UCL	0.0772
95% KM (z) UCL	0.0773	95% KM Bootstrap t UCL	0.078
90% KM Chebyshev UCL	0.0781	95% KM Chebyshev UCL	0.0789
97.5% KM Chebyshev UCL	0.0801	99% KM Chebyshev UCL	0.0824

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.676	Anderson-Darling GOF Test	
5% A-D Critical Value	0.715	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.249	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.294	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	9.549	k star (bias corrected MLE)	6.052
Theta hat (MLE)	0.0137	Theta star (bias corrected MLE)	0.0215
nu hat (MLE)	152.8	nu star (bias corrected)	96.83
MLE Mean (bias corrected)	0.13	MLE Sd (bias corrected)	0.053

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	48.78	nu hat (KM)	35320
Approximate Chi Square Value (N/A, α)	34884	Adjusted Chi Square Value (N/A, β)	34882
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0772	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0772

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0131
Maximum	0.25	Median	0.01
SD	0.0194	CV	1.477
k hat (MLE)	2.737	k star (bias corrected MLE)	2.716
Theta hat (MLE)	0.0048	Theta star (bias corrected MLE)	0.00484
nu hat (MLE)	1982	nu star (bias corrected)	1966
MLE Mean (bias corrected)	0.0131	MLE Sd (bias corrected)	0.00798
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1864	Adjusted Chi Square Value (N/A, β)	1864
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0139	95% Gamma Adjusted UCL (use when $n < 50$)	0.0139

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.843	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	

Lilliefors Test Statistic	0.227	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0173	Mean in Log Scale	-4.522
SD in Original Scale	0.0225	SD in Log Scale	0.94
95% t UCL (assumes normality of ROS data)	0.0192	95% Percentile Bootstrap UCL	0.0193
95% BCA Bootstrap UCL	0.0196	95% Bootstrap t UCL	0.0197
95% H-UCL (Log ROS)	0.0187		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-2.579	95% H-UCL (KM -Log)	N/A
KM SD (logged)	0.0869	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.00492		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0425	Mean in Log Scale	-3.19
SD in Original Scale	0.0162	SD in Log Scale	0.211
95% t UCL (Assumes normality)	0.0439	95% H-Stat UCL	0.0429
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0773	95% KM (Percentile Bootstrap) UCL	0.0772
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (semivolatile organics (ug/l)***benzaldehyde***100-52-7***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	31
Number of Detects	29	Number of Non-Detects	333
Number of Distinct Detects	21	Number of Distinct Non-Detects	14
Minimum Detect	0.16	Minimum Non-Detect	0.14
Maximum Detect	1	Maximum Non-Detect	0.437
Variance Detects	0.0267	Percent Non-Detects	91.99%
Mean Detects	0.526	SD Detects	0.163
Median Detects	0.56	CV Detects	0.31
Skewness Detects	-0.228	Kurtosis Detects	2.799
Mean of Logged Detects	-0.706	SD of Logged Detects	40.20%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.847	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.229	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.171	Standard Error of Mean	0.00612
SD	0.114	95% KM (BCA) UCL	0.18
95% KM (t) UCL	0.181	95% KM (Percentile Bootstrap) UCL	0.181
95% KM (z) UCL	0.181	95% KM Bootstrap t UCL	0.183
90% KM Chebyshev UCL	0.189	95% KM Chebyshev UCL	0.198
97.5% KM Chebyshev UCL	0.209	99% KM Chebyshev UCL	0.232
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.816	Anderson-Darling GOF Test	
5% A-D Critical Value	0.746	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.283	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.163	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	8.01	k star (bias corrected MLE)	7.204
Theta hat (MLE)	0.0657	Theta star (bias corrected MLE)	0.073
nu hat (MLE)	464.6	nu star (bias corrected)	417.9
MLE Mean (bias corrected)	0.526	MLE Sd (bias corrected)	0.196
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.239	nu hat (KM)	1621
Approximate Chi Square Value (N/A, α)	1529	Adjusted Chi Square Value (N/A, β)	1528

95% Gamma Approximate KM-UCL (use when n>=50)	0.181	95% Gamma Adjusted KM-UCL (use when n<50)	0.181
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Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0971
Maximum	1	Median	0.01
SD	0.158	CV	1.631
k hat (MLE)	0.545	k star (bias corrected MLE)	0.543
Theta hat (MLE)	0.178	Theta star (bias corrected MLE)	0.179
nu hat (MLE)	394.8	nu star (bias corrected)	392.9
MLE Mean (bias corrected)	0.0971	MLE Sd (bias corrected)	0.132
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (392.90, α)	348	Adjusted Chi Square Value (392.90, β)	347.8
95% Gamma Approximate UCL (use when n>=50)	0.11	95% Gamma Adjusted UCL (use when n<50)	0.11

Lognormal GOF Test on Detected Observations Only
Shapiro Wilk Test Statistic 0.745 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value 0.926 Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic 0.306 Lilliefors GOF Test
5% Lilliefors Critical Value 0.165 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.153	Mean in Log Scale	-2.18
SD in Original Scale	0.138	SD in Log Scale	0.773
95% t UCL (assumes normality of ROS data)	0.165	95% Percentile Bootstrap UCL	0.165
95% BCA Bootstrap UCL	0.166	95% Bootstrap t UCL	0.167
95% H-UCL (Log ROS)	0.165		

DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	0.119	Mean in Log Scale	-2.389
SD in Original Scale	0.134	SD in Log Scale	0.584
95% t UCL (Assumes normality)	0.131	95% H-Stat UCL	0.115
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (t) UCL 0.181 95% KM (% Bootstrap) UCL 0.181

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***biphenyl (1,1'-biphenyl)***92-52-4***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	30
Number of Detects	12	Number of Non-Detects	350
Number of Distinct Detects	11	Number of Distinct Non-Detects	20
Minimum Detect	0.00242	Minimum Non-Detect	0.23%
Maximum Detect	0.041	Maximum Non-Detect	0.08
Variance Detects	1.97E-04	Percent Non-Detects	96.69%
Mean Detects	0.0116	SD Detects	0.014
Median Detects	0.00582	CV Detects	1.206
Skewness Detects	1.859	Kurtosis Detects	2.131
Mean of Logged Detects	-4.951	SD of Logged Detects	0.967

Normal GOF Test on Detects Only
Shapiro Wilk Test Statistic 0.641 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value 0.859 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic 0.36 Lilliefors GOF Test
5% Lilliefors Critical Value 0.256 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00385	Standard Error of Mean	5.32E-04
SD	0.00391	95% KM (BCA) UCL	0.00482
95% KM (t) UCL	0.00473	95% KM (Percentile Bootstrap) UCL	0.00471
95% KM (z) UCL	0.00473	95% KM Bootstrap t UCL	0.00511
90% KM Chebyshev UCL	0.00545	95% KM Chebyshev UCL	0.00617
97.5% KM Chebyshev UCL	0.00717	99% KM Chebyshev UCL	0.00915

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.017	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.243	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.252	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.145	k star (bias corrected MLE)	0.914
Theta hat (MLE)	0.0102	Theta star (bias corrected MLE)	0.0127
nu hat (MLE)	27.47	nu star (bias corrected)	21.94
MLE Mean (bias corrected)	0.0116	MLE Sd (bias corrected)	0.0122

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.969	nu hat (KM)	701.3
Approximate Chi Square Value (701.34, α)	640.9	Adjusted Chi Square Value (701.34, β)	640.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.00421	95% Gamma Adjusted KM-UCL (use when n<50)	0.00421

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00242	Mean	0.0105
Maximum	0.041	Median	0.01
SD	0.00316	CV	0.301
k hat (MLE)	18.08	k star (bias corrected MLE)	17.93
Theta hat (MLE)	5.81E-04	Theta star (bias corrected MLE)	5.86E-04
nu hat (MLE)	13087	nu star (bias corrected)	12980
MLE Mean (bias corrected)	0.0105	MLE Sd (bias corrected)	0.00248
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	12716	Adjusted Chi Square Value (N/A, β)	12715
95% Gamma Approximate UCL (use when n>=50)	0.0107	95% Gamma Adjusted UCL (use when n<50)	0.0107

Lognormal GOF Test on Detected Observations Only	
Shapiro Wilk Test Statistic	0.87 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.859 Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.168 Lilliefors GOF Test
5% Lilliefors Critical Value	0.256 Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00302	Mean in Log Scale	-6.405
SD in Original Scale	0.00436	SD in Log Scale	1.099
95% t UCL (assumes normality of ROS data)	0.0034	95% Percentile Bootstrap UCL	0.0034
95% BCA Bootstrap UCL	0.00344	95% Bootstrap t UCL	0.00349
95% H-UCL (Log ROS)	0.00343		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.761	95% H-UCL (KM -Log)	0.00381
KM SD (logged)	0.531	95% Critical H Value (KM-Log)	1.809
KM Standard Error of Mean (logged)	0.0987		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0191	Mean in Log Scale	-4.065
SD in Original Scale	0.00509	SD in Log Scale	0.642
95% t UCL (Assumes normality)	0.0196	95% H-Stat UCL	0.0225
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00473	95% GROS Approximate Gamma UCL	0.0107
95% Approximate Gamma KM-UCL	0.00421		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***bis(2-ethylhexyl)phthalate***117-81-7***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	49
Number of Detects	56	Number of Non-Detects	306
Number of Distinct Detects	45	Number of Distinct Non-Detects	8
Minimum Detect	0.091	Minimum Non-Detect	0.064

Maximum Detect	63	Maximum Non-Detect	2.4
Variance Detects	75.71	Percent Non-Detects	84.53%
Mean Detects	3.415	SD Detects	8.701
Median Detects	1.4	CV Detects	2.548
Skewness Detects	6.194	Kurtosis Detects	4177.00%
Mean of Logged Detects	0.234	SD of Logged Detects	1.366
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.348	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.351	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.763	Standard Error of Mean	0.193
SD	3.582	95% KM (BCA) UCL	1.152
95% KM (t) UCL	1.082	95% KM (Percentile Bootstrap) UCL	1.123
95% KM (z) UCL	1.081	95% KM Bootstrap t UCL	1.584
90% KM Chebyshev UCL	1.343	95% KM Chebyshev UCL	1.606
97.5% KM Chebyshev UCL	1.97	99% KM Chebyshev UCL	2.687
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.901	Anderson-Darling GOF Test	
5% A-D Critical Value	0.805	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.128	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.125	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.618	k star (bias corrected MLE)	0.597
Theta hat (MLE)	5.522	Theta star (bias corrected MLE)	5.718
nu hat (MLE)	69.27	nu star (bias corrected)	66.89
MLE Mean (bias corrected)	3.415	MLE Sd (bias corrected)	4.419
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0454	nu hat (KM)	32.84
Approximate Chi Square Value (32.84, α)	20.74	Adjusted Chi Square Value (32.84, β)	20.7
95% Gamma Approximate KM-UCL (use when n>=50)	1.208	95% Gamma Adjusted KM-UCL (use when n<50)	1.21
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.636
Maximum	63	Median	0.01
SD	3.619	CV	5.69
k hat (MLE)	0.238	k star (bias corrected MLE)	0.238
Theta hat (MLE)	2.676	Theta star (bias corrected MLE)	2.678
nu hat (MLE)	172.1	nu star (bias corrected)	172
MLE Mean (bias corrected)	0.636	MLE Sd (bias corrected)	1.305
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (171.98, α)	142.6	Adjusted Chi Square Value (171.98, β)	142.5
95% Gamma Approximate UCL (use when n>=50)	0.767	95% Gamma Adjusted UCL (use when n<50)	0.767
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.128	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.779	Mean in Log Scale	-1.529
SD in Original Scale	3.591	SD in Log Scale	1.472
95% t UCL (assumes normality of ROS data)	1.09	95% Percentile Bootstrap UCL	1.129
95% BCA Bootstrap UCL	1.348	95% Bootstrap t UCL	1.758
95% H-UCL (Log ROS)	0.781		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.33	95% H-UCL (KM -Log)	0.596
KM SD (logged)	1.161	95% Critical H Value (KM-Log)	2.262
KM Standard Error of Mean (logged)	0.157		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.036	Mean in Log Scale	-0.429
SD in Original Scale	3.547	SD in Log Scale	0.712
95% t UCL (Assumes normality)	1.343	95% H-Stat UCL	0.902

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL 1.152

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***butylbenzyl phthalate***85-68-7***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	47
Number of Detects	107	Number of Non-Detects	255
Number of Distinct Detects	41	Number of Distinct Non-Detects	12
Minimum Detect	0.134	Minimum Non-Detect	0.13
Maximum Detect	1.50E+00	Maximum Non-Detect	27.00%
Variance Detects	0.0424	Percent Non-Detects	70.44%
Mean Detects	0.266	SD Detects	0.206
Median Detects	0.182	CV Detects	7.74E-01
Skewness Detects	3.04	Kurtosis Detects	12.28
Mean of Logged Detects	-1.494	SD of Logged Detects	0.522
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.636	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.289	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0857	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.17	Standard Error of Mean	0.00674
SD	0.128	95% KM (BCA) UCL	0.181
95% KM (t) UCL	0.182	95% KM (Percentile Bootstrap) UCL	0.181
95% KM (z) UCL	0.182	95% KM Bootstrap t UCL	0.184
90% KM Chebyshev UCL	0.191	95% KM Chebyshev UCL	0.2
97.5% KM Chebyshev UCL	0.213	99% KM Chebyshev UCL	0.237
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	9.238	Anderson-Darling GOF Test	
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.243	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0882	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.083	k star (bias corrected MLE)	3.003
Theta hat (MLE)	0.0864	Theta star (bias corrected MLE)	0.0887
nu hat (MLE)	659.8	nu star (bias corrected)	642.6
MLE Mean (bias corrected)	0.266	MLE Sd (bias corrected)	0.154
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.784	nu hat (KM)	1292
Approximate Chi Square Value (N/A, α)	1.21E+03	Adjusted Chi Square Value (N/A, β)	1.21E+03
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.182	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.182
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0867
Maximum	1.5	Median	0.01
SD	0.161	CV	1.861
k hat (MLE)	0.529	k star (bias corrected MLE)	0.526
Theta hat (MLE)	0.164	Theta star (bias corrected MLE)	0.165
nu hat (MLE)	382.7	nu star (bias corrected)	380.8
MLE Mean (bias corrected)	0.0867	MLE Sd (bias corrected)	0.12
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (380.84, α)	336.6	Adjusted Chi Square Value (380.84, β)	336.4
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0981	95% Gamma Adjusted UCL (use when $n < 50$)	0.0982
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.201	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0857	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.115	Mean in Log Scale	-2.669
SD in Original Scale	0.151	SD in Log Scale	0.991
95% t UCL (assumes normality of ROS data)	0.128	95% Percentile Bootstrap UCL	0.128
95% BCA Bootstrap UCL	0.13	95% Bootstrap t UCL	0.13
95% H-UCL (Log ROS)	0.126		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.128	Mean in Log Scale	-2.314
SD in Original Scale	0.143	SD in Log Scale	0.604
95% t UCL (Assumes normality)	0.141	95% H-Stat UCL	0.126

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.182	95% KM (% Bootstrap) UCL	0.181
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***dibenzo(a,h)anthracene***53-70-3***ug/l***t)

General Statistics

Total Number of Observations	335	Number of Distinct Observations	22
Number of Detects	19	Number of Non-Detects	#####
Number of Distinct Detects	18	Number of Distinct Non-Detects	5
Minimum Detect	0.016	Minimum Non-Detect	0.015
Maximum Detect	1.7	Maximum Non-Detect	0.03
Variance Detects	0.174	Percent Non-Detects	94.33%
Mean Detects	0.231	SD Detects	0.417
Median Detects	0.075	CV Detects	1.81
Skewness Detects	2.945	Kurtosis Detects	8.99
Mean of Logged Detects	-2.359	SD of Logged Detects	1.226

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.539	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.385	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.203	Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.0272	Standard Error of Mean	0.00611
SD	0.109	95% KM (BCA) UCL	0.0386
95% KM (t) UCL	0.0373	95% KM (Percentile Bootstrap) UCL	0.0385
95% KM (z) UCL	0.0373	95% KM Bootstrap t UCL	0.0589
90% KM Chebyshev UCL	0.0456	95% KM Chebyshev UCL	0.0539
97.5% KM Chebyshev UCL	0.0654	99% KM Chebyshev UCL	0.088

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.678	Anderson-Darling GOF Test	
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.293	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.207	Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only

k hat (MLE)	0.68	k star (bias corrected MLE)	0.608
Theta hat (MLE)	0.339	Theta star (bias corrected MLE)	0.379
nu hat (MLE)	25.85	nu star (bias corrected)	23.1
MLE Mean (bias corrected)	0.231	MLE Sd (bias corrected)	0.296

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0626	nu hat (KM)	41.91
Approximate Chi Square Value (41.91, α)	28.07	Adjusted Chi Square Value (41.91, β)	28.02
95% Gamma Approximate KM-UCL (use when n \geq 50)	0.0407	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	0.0407

Gamma (KM) may not be used when k hat (KM) is $<$ 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has $>$ 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as $<$ 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0225
Maximum	1.7	Median	0.01
SD	0.11	CV	4.867
k hat (MLE)	0.86	k star (bias corrected MLE)	0.854
Theta hat (MLE)	0.0262	Theta star (bias corrected MLE)	0.0264
nu hat (MLE)	575.9	nu star (bias corrected)	572
MLE Mean (bias corrected)	0.0225	MLE Sd (bias corrected)	0.0244
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (572.04, α)	517.6	Adjusted Chi Square Value (572.04, β)	517.3
95% Gamma Approximate UCL (use when n>=50)	0.0249	95% Gamma Adjusted UCL (use when n<50)	0.0249

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.915	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.188	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.203	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.014	Mean in Log Scale	-9.702
SD in Original Scale	0.111	SD in Log Scale	3.614
95% t UCL (assumes normality of ROS data)	0.0239	95% Percentile Bootstrap UCL	0.0243
95% BCA Bootstrap UCL	0.0306	95% Bootstrap t UCL	0.046
95% H-UCL (Log ROS)	0.113		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-4.095	95% H-UCL (KM -Log)	0.02
KM SD (logged)	0.512	95% Critical H Value (KM-Log)	1.798
KM Standard Error of Mean (logged)	0.0287		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0203	Mean in Log Scale	-4.736
SD in Original Scale	0.11	SD in Log Scale	0.651
95% t UCL (Assumes normality)	0.0302	95% H-Stat UCL	0.0116
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			

Suggested UCL to Use		
95% KM (BCA) UCL	0.0386	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***diethyl phthalate***84-66-2***ug/l***)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	39
Number of Detects	58	Number of Non-Detects	304
Number of Distinct Detects	35	Number of Distinct Non-Detects	9
Minimum Detect	0.037	Minimum Non-Detect	0.032
Maximum Detect	1.7	Maximum Non-Detect	0.28
Variance Detects	0.165	Percent Non-Detects	83.98%
Mean Detects	0.372	SD Detects	0.406
Median Detects	0.195	CV Detects	1.092
Skewness Detects	2.069	Kurtosis Detects	3.552
Mean of Logged Detects	-1.406	SD of Logged Detects	0.88

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.681	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	6.66E-16	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.297	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.116	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0947	Standard Error of Mean	0.0113
SD	0.203	95% KM (BCA) UCL	0.116
95% KM (t) UCL	0.113	95% KM (Percentile Bootstrap) UCL	0.114
95% KM (z) UCL	0.113	95% KM Bootstrap t UCL	0.118
90% KM Chebyshev UCL	1.29E-01	95% KM Chebyshev UCL	0.144
97.5% KM Chebyshev UCL	0.165	99% KM Chebyshev UCL	0.207

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.205	Anderson-Darling GOF Test	
5% A-D Critical Value	0.772	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.225	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.119	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.339	k star (bias corrected MLE)	1.282
Theta hat (MLE)	0.278	Theta star (bias corrected MLE)	0.29
nu hat (MLE)	155.4	nu star (bias corrected)	148.7
MLE Mean (bias corrected)	0.372	MLE Sd (bias corrected)	0.329

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.218	nu hat (KM)	158.1
Approximate Chi Square Value (158.12, α)	130	Adjusted Chi Square Value (158.12, β)	129.9
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.115	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.115

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0685
Maximum	1.7	Median	0.01
SD	0.209	CV	3.052
k hat (MLE)	0.463	k star (bias corrected MLE)	0.461
Theta hat (MLE)	0.148	Theta star (bias corrected MLE)	0.149
nu hat (MLE)	335	nu star (bias corrected)	333.6
MLE Mean (bias corrected)	0.0685	MLE Sd (bias corrected)	0.101
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (333.55, α)	292.2	Adjusted Chi Square Value (333.55, β)	292.1
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0782	95% Gamma Adjusted UCL (use when $n < 50$)	0.0782

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.165	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.116	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0797	Mean in Log Scale	-3.965
SD in Original Scale	0.207	SD in Log Scale	1.706
95% t UCL (assumes normality of ROS data)	0.0977	95% Percentile Bootstrap UCL	0.0988
95% BCA Bootstrap UCL	0.101	95% Bootstrap t UCL	0.102
95% H-UCL (Log ROS)	0.104		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.117	Mean in Log Scale	-2.52
SD in Original Scale	0.197	SD in Log Scale	0.681
95% t UCL (Assumes normality)	0.134	95% H-Stat UCL	0.109
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	0.113	95% KM (% Bootstrap) UCL	0.114

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***di-n-butyl phthalate***84-74-2***ug/l***)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	13
Number of Detects	10	Number of Non-Detects	352
Number of Distinct Detects	7	Number of Distinct Non-Detects	8
Minimum Detect	0.12	Minimum Non-Detect	0.034
Maximum Detect	0.3	Maximum Non-Detect	0.24
Variance Detects	0.00492	Percent Non-Detects	97.24%
Mean Detects	0.185	SD Detects	0.0701
Median Detects	0.16	CV Detects	0.379
Skewness Detects	0.648	Kurtosis Detects	-1.293
Mean of Logged Detects	-1.749	SD of Logged Detects	0.367

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.838	Shapiro Wilk GOF Test	

5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0383	Standard Error of Mean	0.00152
SD	0.0273	95% KM (BCA) UCL	0.0408
95% KM (t) UCL	0.0408	95% KM (Percentile Bootstrap) UCL	0.0408
95% KM (z) UCL	0.0408	95% KM Bootstrap t UCL	0.0412
90% KM Chebyshev UCL	0.0428	95% KM Chebyshev UCL	0.0449
97.5% KM Chebyshev UCL	0.0478	99% KM Chebyshev UCL	0.0534
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.739	Anderson-Darling GOF Test	
5% A-D Critical Value	0.727	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.298	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.267	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	8.22	k star (bias corrected MLE)	5.821
Theta hat (MLE)	0.0225	Theta star (bias corrected MLE)	0.0318
nu hat (MLE)	164.4	nu star (bias corrected)	116.4
MLE Mean (bias corrected)	0.185	MLE Sd (bias corrected)	0.0767
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.972	nu hat (KM)	1428
Approximate Chi Square Value (N/A, α)	1341	Adjusted Chi Square Value (N/A, β)	1341
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0407	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0408
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0164
Maximum	0.3	Median	0.01
SD	0.0318	CV	1.944
k hat (MLE)	1.547	k star (bias corrected MLE)	1.536
Theta hat (MLE)	0.0106	Theta star (bias corrected MLE)	0.0107
nu hat (MLE)	1120	nu star (bias corrected)	1112
MLE Mean (bias corrected)	0.0164	MLE Sd (bias corrected)	0.0132
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1036	Adjusted Chi Square Value (N/A, β)	1035
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0176	95% Gamma Adjusted UCL (use when $n < 50$)	0.0176
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.846	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.286	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0235	Mean in Log Scale	-4.377
SD in Original Scale	0.0351	SD in Log Scale	1.115
95% t UCL (assumes normality of ROS data)	0.0265	95% Percentile Bootstrap UCL	0.0266
95% BCA Bootstrap UCL	0.027	95% Bootstrap t UCL	0.0269
95% H-UCL (Log ROS)	0.0266		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-3.335	95% H-UCL (KM -Log)	0.0379
KM SD (logged)	0.277	95% Critical H Value (KM-Log)	1.704
KM Standard Error of Mean (logged)	0.0155		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0612	Mean in Log Scale	-2.861
SD in Original Scale	0.0265	SD in Log Scale	0.381
95% t UCL (Assumes normality)	0.0635	95% H-Stat UCL	0.0637
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0408	95% KM (% Bootstrap) UCL	0.0408

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***di-n-octyl phthalate***117-84-0***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 1500.00%
Number of Detects	5	Number of Non-Detects 357
Number of Distinct Detects	5	Number of Distinct Non-Detects 10
Minimum Detect	0.083	Minimum Non-Detect 0.035
Maximum Detect	2.2	Maximum Non-Detect 0.4
Variance Detects	0.592	Percent Non-Detects 98.62%
Mean Detects	0.959	SD Detects 0.77
Median Detects	0.794	CV Detects 0.803
Skewness Detects	1.12E+00	Kurtosis Detects 2.557
Mean of Logged Detects	-0.449	SD of Logged Detects 1.218
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.308	Lilliefors GOF Test
5% Lilliefors Critical Value	0.396	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0496	Standard Error of Mean 0.0082
SD	0.135	95% KM (BCA) UCL 0.0666
95% KM (t) UCL	0.0631	95% KM (Percentile Bootstrap) UCL 0.0631
95% KM (z) UCL	0.0631	95% KM Bootstrap t UCL 0.0594
90% KM Chebyshev UCL	0.0742	95% KM Chebyshev UCL 0.0854
97.5% KM Chebyshev UCL	0.101	99% KM Chebyshev UCL 0.131
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.438	Anderson-Darling GOF Test
5% A-D Critical Value	0.688	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.32	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.362	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.371	k star (bias corrected MLE) 0.682
Theta hat (MLE)	0.7	Theta star (bias corrected MLE) 1.407
nu hat (MLE)	13.71	nu star (bias corrected) 6.817
MLE Mean (bias corrected)	0.959	MLE Sd (bias corrected) 1.162
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.135	nu hat (KM) 97.83
Approximate Chi Square Value (97.83, α)	76.01	Adjusted Chi Square Value (97.83, β) 75.94
95% Gamma Approximate KM-UCL (use when n>=50)	0.0638	95% Gamma Adjusted KM-UCL (use when n<50) 0.0639
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.025
Maximum	2.2	Median 0.01
SD	0.139	CV 5.569
k hat (MLE)	0.721	k star (bias corrected MLE) 0.717
Theta hat (MLE)	0.0347	Theta star (bias corrected MLE) 0.0349
nu hat (MLE)	522.2	nu star (bias corrected) 519.2
MLE Mean (bias corrected)	0.025	MLE Sd (bias corrected) 0.0295
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (519.21, α)	467.4	Adjusted Chi Square Value (519.21, β) 467.2
95% Gamma Approximate UCL (use when n>=50)	0.0278	95% Gamma Adjusted UCL (use when n<50) 0.0278
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.836	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.363	Lilliefors GOF Test
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0191	Mean in Log Scale -8.317
SD in Original Scale	0.14	SD in Log Scale 3.083
95% t UCL (assumes normality of ROS data)	0.0312	95% Percentile Bootstrap UCL 0.0322

95% BCA Bootstrap UCL	0.0371	95% Bootstrap t UCL	0.0487
95% H-UCL (Log ROS)	0.0577		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-3.279	95% H-UCL (KM -Log)	0.0422
KM SD (logged)	0.395	95% Critical H Value (KM-Log)	1.748
KM Standard Error of Mean (logged)	0.0442		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.108	Mean in Log Scale	-2.378
SD in Original Scale	0.131	SD in Log Scale	0.494
95% t UCL (Assumes normality)	0.119	95% H-Stat UCL	0.11
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0631	95% KM (Percentile Bootstrap) UCL	0.0631
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (semivolatile organics (ug/l)***phenol***108-95-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	25
Number of Detects	8	Number of Non-Detects	354
Number of Distinct Detects	8	Number of Distinct Non-Detects	18
Minimum Detect	0.076	Minimum Non-Detect	5.00%
Maximum Detect	0.7	Maximum Non-Detect	0.11
Variance Detects	0.0578	Percent Non-Detects	97.79%
Mean Detects	0.32	SD Detects	0.24
Median Detects	0.23	CV Detects	0.751
Skewness Detects	0.879	Kurtosis Detects	-0.829
Mean of Logged Detects	-1.402	SD of Logged Detects	0.797
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.86	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.256	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.056	Standard Error of Mean	0.00292
SD	0.0519	95% KM (BCA) UCL	0.0626
95% KM (t) UCL	0.0608	95% KM (Percentile Bootstrap) UCL	0.0613
95% KM (z) UCL	0.0608	95% KM Bootstrap t UCL	0.0631
90% KM Chebyshev UCL	0.0647	95% KM Chebyshev UCL	0.0687
97.5% KM Chebyshev UCL	0.0742	99% KM Chebyshev UCL	0.085
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.29	Anderson-Darling GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.186	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.297	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.048	k star (bias corrected MLE)	1.364
Theta hat (MLE)	0.156	Theta star (bias corrected MLE)	0.235
nu hat (MLE)	32.78	nu star (bias corrected)	21.82
MLE Mean (bias corrected)	0.32	MLE Sd (bias corrected)	0.274
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.162	nu hat (KM)	841.2
Approximate Chi Square Value (841.21, α)	774.9	Adjusted Chi Square Value (841.21, β)	774.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0608	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0608
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0169

Maximum	0.7	Median	0.01
SD	0.0566	CV	3.36
k hat (MLE)	1.248	k star (bias corrected MLE)	1.24
Theta hat (MLE)	0.0135	Theta star (bias corrected MLE)	0.0136
nu hat (MLE)	903.6	nu star (bias corrected)	897.5
MLE Mean (bias corrected)	0.0169	MLE Sd (bias corrected)	0.0151
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (897.46, α)	828.9	Adjusted Chi Square Value (897.46, β)	828.7
95% Gamma Approximate UCL (use when n>=50)	0.0182	95% Gamma Adjusted UCL (use when n<50)	0.0183

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.953	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.141	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00954	Mean in Log Scale	-8.315
SD in Original Scale	0.058	SD in Log Scale	2.746
95% t UCL (assumes normality of ROS data)	0.0146	95% Percentile Bootstrap UCL	0.015
95% BCA Bootstrap UCL	0.0163	95% Bootstrap t UCL	0.0201
95% H-UCL (Log ROS)	0.0187		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-2.961	95% H-UCL (KM -Log)	0.0548
KM SD (logged)	0.259	95% Critical H Value (KM-Log)	1.698
KM Standard Error of Mean (logged)	0.0146		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0347	Mean in Log Scale	-3.522
SD in Original Scale	0.0545	SD in Log Scale	0.342
95% t UCL (Assumes normality)	0.0394	95% H-Stat UCL	0.0323
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	0.0608	95% KM (Percentile Bootstrap) UCL	0.0613

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (semivolatile organics (ug/l)***total cpah teq (epa 1993) (u = 0) (mdl)***tscpahtef7ma_0n_mdl***ug/l****t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	45
Number of Detects	42	Number of Non-Detects	293
Number of Distinct Detects	41	Number of Distinct Non-Detects	4
Minimum Detect	0.0015	Minimum Non-Detect	0.015
Maximum Detect	3.221	Maximum Non-Detect	0.018
Variance Detects	0.334	Percent Non-Detects	87.46%
Mean Detects	0.212	SD Detects	0.578
Median Detects	0.0485	CV Detects	2.721
Skewness Detects	4.285	Kurtosis Detects	19.63
Mean of Logged Detects	-3.51	SD of Logged Detects	2.105

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.395	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.416	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.137	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0302	Standard Error of Mean	0.0118
SD	0.214	95% KM (BCA) UCL	0.051
95% KM (t) UCL	0.0497	95% KM (Percentile Bootstrap) UCL	0.0502
95% KM (z) UCL	0.0497	95% KM Bootstrap t UCL	0.0903
90% KM Chebyshev UCL	0.0657	95% KM Chebyshev UCL	0.0818
97.5% KM Chebyshev UCL	0.104	99% KM Chebyshev UCL	0.148

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.148	Anderson-Darling GOF Test	
5% A-D Critical Value	0.849	Detected Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.205	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.147	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.344	k star (bias corrected MLE)	0.335
Theta hat (MLE)	0.618	Theta star (bias corrected MLE)	0.634
nu hat (MLE)	28.89	nu star (bias corrected)	28.16
MLE Mean (bias corrected)	0.212	MLE Sd (bias corrected)	0.367
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.02	nu hat (KM)	13.4
Approximate Chi Square Value (13.40, α)	6.162	Adjusted Chi Square Value (13.40, β)	6.141
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0657	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0659
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0015	Mean	0.041
Maximum	3.221	Median	0.01
SD	0.214	CV	5.225
k hat (MLE)	0.552	k star (bias corrected MLE)	0.549
Theta hat (MLE)	0.0742	Theta star (bias corrected MLE)	0.0746
nu hat (MLE)	369.9	nu star (bias corrected)	367.9
MLE Mean (bias corrected)	0.041	MLE Sd (bias corrected)	0.0553
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (367.89, α)	324.4	Adjusted Chi Square Value (367.89, β)	324.3
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0465	95% Gamma Adjusted UCL (use when $n < 50$)	0.0465
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.877	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.137	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0342	Mean in Log Scale	-5.354
SD in Original Scale	0.214	SD in Log Scale	1.717
95% t UCL (assumes normality of ROS data)	0.0535	95% Percentile Bootstrap UCL	0.0546
95% BCA Bootstrap UCL	0.0644	95% Bootstrap t UCL	0.0929
95% H-UCL (Log ROS)	0.0269		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.444	95% H-UCL (KM -Log)	0.0104
KM SD (logged)	1.203	95% Critical H Value (KM-Log)	2.294
KM Standard Error of Mean (logged)	0.158		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0333	Mean in Log Scale	-4.708
SD in Original Scale	0.214	SD in Log Scale	0.867
95% t UCL (Assumes normality)	0.0525	95% H-Stat UCL	0.0144
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	0.104		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (semivolatile organics (ug/l)***total cresol (o,m,p) (u = 0) (mdl)***tcresol_0n_mdl***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	31
Number of Detects	11	Number of Non-Detects	351
Number of Distinct Detects	11	Number of Distinct Non-Detects	20
Minimum Detect	1.1	Minimum Non-Detect	0.036
Maximum Detect	56.6	Maximum Non-Detect	0.1
Variance Detects	251.7	Percent Non-Detects	96.96%
Mean Detects	11.48	SD Detects	15.87

Median Detects	5.7	CV Detects	1.382
Skewness Detects	2.705	Kurtosis Detects	7.927
Mean of Logged Detects	1.834	SD of Logged Detects	112.90%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.636	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.28	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.384	Standard Error of Mean	0.181
SD	3.288	95% KM (BCA) UCL	0.714
95% KM (t) UCL	0.683	95% KM (Percentile Bootstrap) UCL	0.7
95% KM (z) UCL	0.682	95% KM Bootstrap t UCL	1.16
90% KM Chebyshev UCL	0.928	95% KM Chebyshev UCL	1.174
97.5% KM Chebyshev UCL	1.516	99% KM Chebyshev UCL	2.187
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.444	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.211	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.263	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.957	k star (bias corrected MLE)	0.756
Theta hat (MLE)	12	Theta star (bias corrected MLE)	15.18
nu hat (MLE)	21.05	nu star (bias corrected)	16.64
MLE Mean (bias corrected)	11.48	MLE Sd (bias corrected)	13.2
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0136	nu hat (KM)	9.863
Approximate Chi Square Value (9.86, α)	3.856	Adjusted Chi Square Value (9.86, β)	3.841
95% Gamma Approximate KM-UCL (use when n>=50)	0.982	95% Gamma Adjusted KM-UCL (use when n<50)	0.985
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.359
Maximum	56.6	Median	0.01
SD	3.296	CV	9.19
k hat (MLE)	0.215	k star (bias corrected MLE)	0.215
Theta hat (MLE)	1.668	Theta star (bias corrected MLE)	1.667
nu hat (MLE)	155.7	nu star (bias corrected)	155.7
MLE Mean (bias corrected)	0.359	MLE Sd (bias corrected)	0.773
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (155.72, α)	127.9	Adjusted Chi Square Value (155.72, β)	127.8
95% Gamma Approximate UCL (use when n>=50)	0.437	95% Gamma Adjusted UCL (use when n<50)	0.437
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.976	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.14	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.377	Mean in Log Scale	-6.907
SD in Original Scale	3.295	SD in Log Scale	3.62
95% t UCL (assumes normality of ROS data)	0.663	95% Percentile Bootstrap UCL	0.695
95% BCA Bootstrap UCL	0.87	95% Bootstrap t UCL	1.136
95% H-UCL (Log ROS)	1.832		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-3.167	95% H-UCL (KM -Log)	0.0699
KM SD (logged)	0.905	95% Critical H Value (KM-Log)	2.052
KM Standard Error of Mean (logged)	0.0499		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.39	Mean in Log Scale	-3.035
SD in Original Scale	3.292	SD in Log Scale	0.911
95% t UCL (Assumes normality)	0.675	95% H-Stat UCL	0.0803
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	0.683	95% GROS Approximate Gamma UCL 0.437
95% Approximate Gamma KM-UCL	0.982	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (total petroleum hydrocarbons (mg/l)***diesel range organics (c10 - c28)***tphc10_28***mg/l***t)

General Statistics		
Total Number of Observations	335	Number of Distinct Observations 115
Number of Detects	255	Number of Non-Detects 80
Number of Distinct Detects	114	Number of Distinct Non-Detects 1
Minimum Detect	0.031	Minimum Non-Detect 0.004
Maximum Detect	0.284	Maximum Non-Detect 0.004
Variance Detects	0.00217	Percent Non-Detects 23.88%
Mean Detects	0.0892	SD Detects 0.0465
Median Detects	0.076	CV Detects 0.522
Skewness Detects	1.549	Kurtosis Detects 2.583
Mean of Logged Detects	-2.53	SD of Logged Detects 46.50%

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.852	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.133	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0555	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0689	Standard Error of Mean 0.00298
SD	0.0544	95% KM (BCA) UCL 0.0739
95% KM (t) UCL	0.0738	95% KM (Percentile Bootstrap) UCL 0.0738
95% KM (z) UCL	0.0738	95% KM Bootstrap t UCL 0.0741
90% KM Chebyshev UCL	0.0778	95% KM Chebyshev UCL 0.0819
97.5% KM Chebyshev UCL	0.0875	99% KM Chebyshev UCL 0.0985

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.073	Anderson-Darling GOF Test
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0866	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0575	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	4.565	k star (bias corrected MLE) 4.514
Theta hat (MLE)	0.0195	Theta star (bias corrected MLE) 0.0198
nu hat (MLE)	2328	nu star (bias corrected) 2302
MLE Mean (bias corrected)	0.0892	MLE Sd (bias corrected) 0.042

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.601	nu hat (KM) 1073
Approximate Chi Square Value (N/A, α)	997.9	Adjusted Chi Square Value (N/A, β) 997.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0741	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.0741

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean 0.0717
Maximum	0.284	Median 0.061
SD	0.0514	CV 0.716
k hat (MLE)	1.814	k star (bias corrected MLE) 1.8
Theta hat (MLE)	0.0395	Theta star (bias corrected MLE) 0.0398
nu hat (MLE)	1215	nu star (bias corrected) 1206
MLE Mean (bias corrected)	0.0717	MLE Sd (bias corrected) 0.0535
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1126	Adjusted Chi Square Value (N/A, β) 1126
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0768	95% Gamma Adjusted UCL (use when $n < 50$) 0.0768

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0735	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0555	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0747	Mean in Log Scale	-2.787
SD in Original Scale	0.0484	SD in Log Scale	0.629
95% t UCL (assumes normality of ROS data)	0.079	95% Percentile Bootstrap UCL	0.0791
95% BCA Bootstrap UCL	0.0794	95% Bootstrap t UCL	0.0795
95% H-UCL (Log ROS)	0.0801		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0684	Mean in Log Scale	-3.41
SD in Original Scale	0.0551	SD in Log Scale	1.625
95% t UCL (Assumes normality)	0.0734	95% H-Stat UCL	0.157
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.0739

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (total petroleum hydrocarbons (mg/l)***total petroleum hydrocarbons (c9-c40)***tphc9_40***mg/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	166
Number of Detects	284	Number of Non-Detects	51
Number of Distinct Detects	165	Number of Distinct Non-Detects	1
Minimum Detect	0.013	Minimum Non-Detect	0.006
Maximum Detect	0.474	Maximum Non-Detect	0.006
Variance Detects	0.0055	Percent Non-Detects	15.22%
Mean Detects	0.125	SD Detects	0.0742
Median Detects	0.104	CV Detects	0.594
Skewness Detects	1.508	Kurtosis Detects	2.961
Mean of Logged Detects	-2.243	SD of Logged Detects	58.30%

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.879	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.124	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0526	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.107	Standard Error of Mean	0.0044
SD	0.0804	95% KM (BCA) UCL	0.114
95% KM (t) UCL	0.114	95% KM (Percentile Bootstrap) UCL	0.114
95% KM (z) UCL	0.114	95% KM Bootstrap t UCL	0.115
90% KM Chebyshev UCL	0.12	95% KM Chebyshev UCL	0.126
97.5% KM Chebyshev UCL	0.134	99% KM Chebyshev UCL	0.151

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.357	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.073	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0543	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	3.24	k star (bias corrected MLE)	3.208
Theta hat (MLE)	0.0385	Theta star (bias corrected MLE)	0.0389
nu hat (MLE)	1840	nu star (bias corrected)	1822
MLE Mean (bias corrected)	0.125	MLE Sd (bias corrected)	0.0697

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.762	nu hat (KM)	1180
Approximate Chi Square Value (N/A, α)	1101	Adjusted Chi Square Value (N/A, β)	1101
95% Gamma Approximate KM-UCL (use when n \geq 50)	0.114	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	0.114

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.108
Maximum	0.474	Median	0.091
SD	0.0788	CV	0.729
k hat (MLE)	1.687	k star (bias corrected MLE)	1.674
Theta hat (MLE)	0.0641	Theta star (bias corrected MLE)	0.0646
nu hat (MLE)	1131	nu star (bias corrected)	1122
MLE Mean (bias corrected)	0.108	MLE Sd (bias corrected)	0.0836
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1045	Adjusted Chi Square Value (N/A, β)	1045
95% Gamma Approximate UCL (use when n>=50)	0.116	95% Gamma Adjusted UCL (use when n<50)	0.116

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.0451 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0526 Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.11	Mean in Log Scale	-2.44
SD in Original Scale	0.0764	SD in Log Scale	0.72
95% t UCL (assumes normality of ROS data)	0.117	95% Percentile Bootstrap UCL	0.118
95% BCA Bootstrap UCL	0.118	95% Bootstrap t UCL	0.117
95% H-UCL (Log ROS)	0.122		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-2.68	95% H-UCL (KM -Log)	0.156
KM SD (logged)	1.163	95% Critical H Value (KM-Log)	2.259
KM Standard Error of Mean (logged)	0.0636		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.106	Mean in Log Scale	-2.786
SD in Original Scale	0.0811	SD in Log Scale	1.391
95% t UCL (Assumes normality)	0.114	95% H-Stat UCL	0.196
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	0.114		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (volatile organics (ug/l)***1,2-dichloroethene, cis-***156-59-2***ug/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	42
Number of Detects	84	Number of Non-Detects	251
Number of Distinct Detects	42	Number of Distinct Non-Detects	1
Minimum Detect	0.19	Minimum Non-Detect	0.19
Maximum Detect	3.8	Maximum Non-Detect	0.19
Variance Detects	0.229	Percent Non-Detects	74.93%
Mean Detects	0.431	SD Detects	0.479
Median Detects	0.315	CV Detects	1.111
Skewness Detects	5.485	Kurtosis Detects	34.25
Mean of Logged Detects	-1.055	SD of Logged Detects	54.20%

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.443 Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.308 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0967 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.25	Standard Error of Mean	0.0143
SD	0.26	95% KM (BCA) UCL	0.277
95% KM (t) UCL	0.274	95% KM (Percentile Bootstrap) UCL	0.276
95% KM (z) UCL	0.274	95% KM Bootstrap t UCL	0.299
90% KM Chebyshev UCL	0.293	95% KM Chebyshev UCL	0.313
97.5% KM Chebyshev UCL	0.34	99% KM Chebyshev UCL	0.393

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.037	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.179	Kolmogrov-Smirnoff GOF	

5% K-S Critical Value	0.0985	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.51	k star (bias corrected MLE) 2.428
Theta hat (MLE)	0.172	Theta star (bias corrected MLE) 0.177
nu hat (MLE)	421.7	nu star (bias corrected) 407.9
MLE Mean (bias corrected)	0.431	MLE Sd (bias corrected) 0.276
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.926	nu hat (KM) 620.7
Approximate Chi Square Value (620.73, α)	563.9	Adjusted Chi Square Value (620.73, β) 563.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.276	95% Gamma Adjusted KM-UCL (use when n<50) 0.276
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.115
Maximum	3.8	Median 0.01
SD	0.3	CV 2.602
k hat (MLE)	0.42	k star (bias corrected MLE) 0.418
Theta hat (MLE)	0.275	Theta star (bias corrected MLE) 0.276
nu hat (MLE)	281.1	nu star (bias corrected) 279.9
MLE Mean (bias corrected)	0.115	MLE Sd (bias corrected) 0.179
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (279.94, α)	242.2	Adjusted Chi Square Value (279.94, β) 242
95% Gamma Approximate UCL (use when n>=50)	0.133	95% Gamma Adjusted UCL (use when n<50) 0.134
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.132	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0967	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.16	Mean in Log Scale -2.469
SD in Original Scale	0.288	SD in Log Scale 1.111
95% t UCL (assumes normality of ROS data)	0.186	95% Percentile Bootstrap UCL 0.189
95% BCA Bootstrap UCL	0.197	95% Bootstrap t UCL 0.201
95% H-UCL (Log ROS)	0.18	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.179	Mean in Log Scale -2.028
SD in Original Scale	0.28	SD in Log Scale 0.625
95% t UCL (Assumes normality)	0.204	95% H-Stat UCL 0.171
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.274	95% KM (% Bootstrap) UCL 0.276
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (volatile organics (ug/l)***acetone***67-64-1***ug/l***t)		
General Statistics		
Total Number of Observations	335	Number of Distinct Observations 45
Number of Detects	130	Number of Non-Detects 205
Number of Distinct Detects	45	Number of Distinct Non-Detects 2
Minimum Detect	1.4	Minimum Non-Detect 140.00%
Maximum Detect	10	Maximum Non-Detect 1.6
Variance Detects	2.958	Percent Non-Detects 61.19%
Mean Detects	3.108	SD Detects 1.72
Median Detects	2.6	CV Detects 0.553
Skewness Detects	2.052	Kurtosis Detects 4.839
Mean of Logged Detects	1.021	SD of Logged Detects 45.10%
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.776	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.167	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0777	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.067	Standard Error of Mean	0.0742
SD	1.352	95% KM (BCA) UCL	2.174
95% KM (t) UCL	2.189	95% KM (Percentile Bootstrap) UCL	2.193
95% KM (z) UCL	2.189	95% KM Bootstrap t UCL	2.21
90% KM Chebyshev UCL	2.29	95% KM Chebyshev UCL	2.39
97.5% KM Chebyshev UCL	2.53	99% KM Chebyshev UCL	2.806

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.497	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.121	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0819	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	4.585	k star (bias corrected MLE)	4.485
Theta hat (MLE)	0.678	Theta star (bias corrected MLE)	0.693
nu hat (MLE)	1192	nu star (bias corrected)	1166
MLE Mean (bias corrected)	3.108	MLE Sd (bias corrected)	1.468

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	2.337	nu hat (KM)	1566
Approximate Chi Square Value (N/A, α)	1475	Adjusted Chi Square Value (N/A, β)	1475
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.194	95% Gamma Adjusted KM-UCL (use when $n < 50$)	2.195

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.331
Maximum	10	Median	0.52
SD	1.795	CV	1.348
k hat (MLE)	0.35	k star (bias corrected MLE)	0.348
Theta hat (MLE)	3.808	Theta star (bias corrected MLE)	3.82
nu hat (MLE)	234.3	nu star (bias corrected)	233.5
MLE Mean (bias corrected)	1.331	MLE Sd (bias corrected)	2.255
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (233.49, α)	199.1	Adjusted Chi Square Value (233.49, β)	199
95% Gamma Approximate UCL (use when $n \geq 50$)	1.561	95% Gamma Adjusted UCL (use when $n < 50$)	1.562

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.717	Mean in Log Scale	0.211
SD in Original Scale	1.568	SD in Log Scale	0.818
95% t UCL (assumes normality of ROS data)	1.859	95% Percentile Bootstrap UCL	1.86
95% BCA Bootstrap UCL	1.868	95% Bootstrap t UCL	1.877
95% H-UCL (Log ROS)	1.886		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.692	Mean in Log Scale	0.255
SD in Original Scale	1.555	SD in Log Scale	0.673
95% t UCL (Assumes normality)	1.832	95% H-Stat UCL	1.735

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	2.189	95% KM (% Bootstrap) UCL	2.193
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (volatile organics (ug/l)***benzene***71-43-2***ug/l***t)

General Statistics

Total Number of Observations	335	Number of Distinct Observations	36
Number of Detects	63	Number of Non-Detects	272

Number of Distinct Detects	36	Number of Distinct Non-Detects	2
Minimum Detect	0.16	Minimum Non-Detect	16.00%
Maximum Detect	1	Maximum Non-Detect	0.19
Variance Detects	0.0339	Percent Non-Detects	81.19%
Mean Detects	0.383	SD Detects	0.184
Median Detects	0.33	CV Detects	0.48
Skewness Detects	1.388	Kurtosis Detects	1.498
Mean of Logged Detects	-1.054	SD of Logged Detects	42.70%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.854	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	3.30E-08	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.158	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.203	Standard Error of Mean	0.00658
SD	0.118	95% KM (BCA) UCL	0.214
95% KM (t) UCL	0.214	95% KM (Percentile Bootstrap) UCL	0.214
95% KM (z) UCL	0.214	95% KM Bootstrap t UCL	0.215
90% KM Chebyshev UCL	0.223	95% KM Chebyshev UCL	0.232
97.5% KM Chebyshev UCL	0.244	99% KM Chebyshev UCL	0.269
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.414	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.132	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.112	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.39	k star (bias corrected MLE)	5.144
Theta hat (MLE)	0.0711	Theta star (bias corrected MLE)	0.0746
nu hat (MLE)	679.2	nu star (bias corrected)	648.2
MLE Mean (bias corrected)	0.383	MLE Sd (bias corrected)	0.169
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.987	nu hat (KM)	2001
Approximate Chi Square Value (N/A, α)	1898	Adjusted Chi Square Value (N/A, β)	1898
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.214	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.214
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0937
Maximum	1	Median	0.01
SD	0.165	CV	1.756
k hat (MLE)	0.512	k star (bias corrected MLE)	0.51
Theta hat (MLE)	0.183	Theta star (bias corrected MLE)	0.184
nu hat (MLE)	343.1	nu star (bias corrected)	341.4
MLE Mean (bias corrected)	0.0937	MLE Sd (bias corrected)	0.131
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (341.40, α)	299.6	Adjusted Chi Square Value (341.40, β)	299.4
95% Gamma Approximate UCL (use when $n \geq 50$)	0.107	95% Gamma Adjusted UCL (use when $n < 50$)	0.107
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.114	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.14	Mean in Log Scale	-2.4
SD in Original Scale	0.149	SD in Log Scale	0.937
95% t UCL (assumes normality of ROS data)	0.153	95% Percentile Bootstrap UCL	0.153
95% BCA Bootstrap UCL	0.154	95% Bootstrap t UCL	0.155
95% H-UCL (Log ROS)	0.157		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.149	Mean in Log Scale	-2.115
SD in Original Scale	0.138	SD in Log Scale	0.544
95% t UCL (Assumes normality)	0.161	95% H-Stat UCL	0.148
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (t) UCL	0.214 95% KM (% Bootstrap) UCL	0.214
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (volatile organics (ug/l)***bromomethane (methyl bromide)***74-83-9***ug/l***t)		
General Statistics		
Total Number of Observations	335	Number of Distinct Observations 4
Number of Detects	4	Number of Non-Detects 331
Number of Distinct Detects	4	Number of Distinct Non-Detects 1
Minimum Detect	0.26	Minimum Non-Detect 26.00%
Maximum Detect	0.6	Maximum Non-Detect 0.26
Variance Detects	0.026	Percent Non-Detects 98.81%
Mean Detects	0.393	SD Detects 0.161
Median Detects	0.355	CV Detects 0.41
Skewness Detects	0.777	Kurtosis Detects -1.666
Mean of Logged Detects	-0.997	SD of Logged Detects 40.30%
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.883	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.276	Lilliefors GOF Test
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.262	Standard Error of Mean 0.00132
SD	0.021	95% KM (BCA) UCL N/A
95% KM (t) UCL	0.264	95% KM (Percentile Bootstrap) UCL N/A
95% KM (z) UCL	0.264	95% KM Bootstrap t UCL N/A
90% KM Chebyshev UCL	0.266	95% KM Chebyshev UCL 0.267
97.5% KM Chebyshev UCL	0.27	99% KM Chebyshev UCL 0.275
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.397	Anderson-Darling GOF Test
5% A-D Critical Value	0.658	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.314	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.395	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	8.249	k star (bias corrected MLE) 2.229
Theta hat (MLE)	0.0476	Theta star (bias corrected MLE) 0.176
nu hat (MLE)	65.99	nu star (bias corrected) 17.83
MLE Mean (bias corrected)	0.393	MLE Sd (bias corrected) 0.263
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	155.7	nu hat (KM) 104291
Approximate Chi Square Value (N/A, α)	103541	Adjusted Chi Square Value (N/A, β) 103538
95% Gamma Approximate KM-UCL (use when n>=50)	0.263	95% Gamma Adjusted KM-UCL (use when n<50) 0.263
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.015
Maximum	0.6	Median 0.01
SD	0.0447	CV 2.973
k hat (MLE)	1.571	k star (bias corrected MLE) 1.559
Theta hat (MLE)	0.00957	Theta star (bias corrected MLE) 0.00965
nu hat (MLE)	1052	nu star (bias corrected) 1044
MLE Mean (bias corrected)	0.015	MLE Sd (bias corrected) 0.012
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	970.2	Adjusted Chi Square Value (N/A, β) 969.9
95% Gamma Approximate UCL (use when n>=50)	0.0162	95% Gamma Adjusted UCL (use when n<50) N/A
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.884	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.281	Lilliefors GOF Test
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0158	Mean in Log Scale	-5.829
SD in Original Scale	0.0498	SD in Log Scale	1.873
95% t UCL (assumes normality of ROS data)	0.0203	95% Percentile Bootstrap UCL	0.0204
95% BCA Bootstrap UCL	0.0217	95% Bootstrap t UCL	0.0225
95% H-UCL (Log ROS)	0.023		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.343	95% H-UCL (KM -Log)	N/A
KM SD (logged)	0.0539	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.0034		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.133	Mean in Log Scale	-2.028
SD in Original Scale	0.0324	SD in Log Scale	0.12
95% t UCL (Assumes normality)	0.136	95% H-Stat UCL	0.134
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.264	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (volatile organics (ug/l)***carbon disulfide***75-15-0***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	19
Number of Detects	25	Number of Non-Detects	310
Number of Distinct Detects	19	Number of Distinct Non-Detects	1
Minimum Detect	0.3	Minimum Non-Detect	0.3
Maximum Detect	2.8	Maximum Non-Detect	0.3
Variance Detects	0.441	Percent Non-Detects	92.54%
Mean Detects	0.797	SD Detects	0.664
Median Detects	0.54	CV Detects	0.833
Skewness Detects	2.022	Kurtosis Detects	3.759
Mean of Logged Detects	-0.465	SD of Logged Detects	66.10%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.729	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.227	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.337	Standard Error of Mean	0.0123
SD	0.221	95% KM (BCA) UCL	0.36
95% KM (t) UCL	0.357	95% KM (Percentile Bootstrap) UCL	0.359
95% KM (z) UCL	0.357	95% KM Bootstrap t UCL	0.373
90% KM Chebyshev UCL	0.374	95% KM Chebyshev UCL	0.391
97.5% KM Chebyshev UCL	0.414	99% KM Chebyshev UCL	0.459
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.069	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.153	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.177	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.246	k star (bias corrected MLE)	2.004
Theta hat (MLE)	0.355	Theta star (bias corrected MLE)	0.398
nu hat (MLE)	112.3	nu star (bias corrected)	100.2
MLE Mean (bias corrected)	0.797	MLE Sd (bias corrected)	0.563
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.337	nu hat (KM)	1566
Approximate Chi Square Value (N/A, α)	1475	Adjusted Chi Square Value (N/A, β)	1474
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.358	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.358
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0688
Maximum	2.8	Median	0.01
SD	0.273	CV	3.969
k hat (MLE)	0.406	k star (bias corrected MLE)	0.404
Theta hat (MLE)	0.169	Theta star (bias corrected MLE)	0.17
nu hat (MLE)	272.1	nu star (bias corrected)	271
MLE Mean (bias corrected)	0.0688	MLE Sd (bias corrected)	0.108
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (270.97, α)	233.8	Adjusted Chi Square Value (270.97, β)	233.7
95% Gamma Approximate UCL (use when n>=50)	0.0797	95% Gamma Adjusted UCL (use when n<50)	0.0798
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.908	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.136	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0948	Mean in Log Scale	-4.005
SD in Original Scale	0.272	SD in Log Scale	1.872
95% t UCL (assumes normality of ROS data)	0.119	95% Percentile Bootstrap UCL	0.12
95% BCA Bootstrap UCL	0.127	95% Bootstrap t UCL	0.128
95% H-UCL (Log ROS)	0.142		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.149	95% H-UCL (KM -Log)	0.336
KM SD (logged)	0.263	95% Critical H Value (KM-Log)	1.698
KM Standard Error of Mean (logged)	0.0146		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.198	Mean in Log Scale	-1.79
SD in Original Scale	0.246	SD in Log Scale	41.60%
95% t UCL (Assumes normality)	0.22	95% H-Stat UCL	0.189
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.357	95% GROS Approximate Gamma UCL	0.0797
95% Approximate Gamma KM-UCL	0.358		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (volatile organics (ug/l)***chlorobenzene***108-90-7***ug/l***)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	7
Number of Detects	6	Number of Non-Detects	329
Number of Distinct Detects	5	Number of Distinct Non-Detects	2
Minimum Detect	0.23	Minimum Non-Detect	0.18
Maximum Detect	1	Maximum Non-Detect	0.19
Variance Detects	0.0937	Percent Non-Detects	98.21%
Mean Detects	0.433	SD Detects	0.306
Median Detects	0.28	CV Detects	0.707
Skewness Detects	1.674	Kurtosis Detects	2.363
Mean of Logged Detects	-1.004	SD of Logged Detects	59.90%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.755	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.311	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.185	Standard Error of Mean	0.00301
SD	0.0503	95% KM (BCA) UCL	0.19
95% KM (t) UCL	0.19	95% KM (Percentile Bootstrap) UCL	0.19
95% KM (z) UCL	0.189	95% KM Bootstrap t UCL	0.2

90% KM Chebyshev UCL	0.194	95% KM Chebyshev UCL	0.198
97.5% KM Chebyshev UCL	0.203	99% KM Chebyshev UCL	0.214
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.659	Anderson-Darling GOF Test	
5% A-D Critical Value	0.701	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.291	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.334	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.133	k star (bias corrected MLE)	1.678
Theta hat (MLE)	0.138	Theta star (bias corrected MLE)	0.258
nu hat (MLE)	37.6	nu star (bias corrected)	20.13
MLE Mean (bias corrected)	0.433	MLE Sd (bias corrected)	0.335
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	13.47	nu hat (KM)	9025
Approximate Chi Square Value (N/A, α)	8805	Adjusted Chi Square Value (N/A, β)	8804
95% Gamma Approximate KM-UCL (use when n \geq 50)	0.189	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	0.189
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0176
Maximum	1	Median	0.01
SD	0.0676	CV	3.843
k hat (MLE)	1.138	k star (bias corrected MLE)	1.13
Theta hat (MLE)	0.0154	Theta star (bias corrected MLE)	0.0156
nu hat (MLE)	762.5	nu star (bias corrected)	757.1
MLE Mean (bias corrected)	0.0176	MLE Sd (bias corrected)	0.0165
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (757.05, α)	694.2	Adjusted Chi Square Value (757.05, β)	694
95% Gamma Approximate UCL (use when n \geq 50)	0.0192	95% Gamma Adjusted UCL (use when n $<$ 50)	0.0192
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.819	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.26	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0144	Mean in Log Scale	-6.978
SD in Original Scale	0.07	SD in Log Scale	2.431
95% t UCL (assumes normality of ROS data)	0.0207	95% Percentile Bootstrap UCL	0.0212
95% BCA Bootstrap UCL	0.0239	95% Bootstrap t UCL	0.0276
95% H-UCL (Log ROS)	0.0288		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.702	95% H-UCL (KM -Log)	0.186
KM SD (logged)	0.119	95% Critical H Value (KM-Log)	1.663
KM Standard Error of Mean (logged)	0.00714		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.101	Mean in Log Scale	-2.333
SD in Original Scale	0.0585	SD in Log Scale	0.194
95% t UCL (Assumes normality)	0.106	95% H-Stat UCL	0.101
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.19	95% KM (Percentile Bootstrap) UCL	0.19
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (volatile organics (ug/l)***chloroform***67-66-3***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	8
Number of Detects	17	Number of Non-Detects	318

Number of Distinct Detects	7	Number of Distinct Non-Detects	2
Minimum Detect	0.2	Minimum Non-Detect	0.16
Maximum Detect	0.39	Maximum Non-Detect	0.2
Variance Detects	0.00259	Percent Non-Detects	94.93%
Mean Detects	0.229	SD Detects	0.0509
Median Detects	0.21	CV Detects	0.222
Skewness Detects	2.446	Kurtosis Detects	6.218
Mean of Logged Detects	-1.493	SD of Logged Detects	18.60%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.639	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.892	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.291	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.215	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.163	Standard Error of Mean	0.00106
SD	0.0188	95% KM (BCA) UCL	0.165
95% KM (t) UCL	0.165	95% KM (Percentile Bootstrap) UCL	0.165
95% KM (z) UCL	0.165	95% KM Bootstrap t UCL	0.166
90% KM Chebyshev UCL	0.167	95% KM Chebyshev UCL	0.168
97.5% KM Chebyshev UCL	0.17	99% KM Chebyshev UCL	0.174
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.163	Anderson-Darling GOF Test	
5% A-D Critical Value	0.738	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.295	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.209	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	27.4	k star (bias corrected MLE)	22.6
Theta hat (MLE)	0.00835	Theta star (bias corrected MLE)	0.0101
nu hat (MLE)	931.6	nu star (bias corrected)	768.5
MLE Mean (bias corrected)	0.229	MLE Sd (bias corrected)	0.0481
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	76.01	nu hat (KM)	50924
Approximate Chi Square Value (N/A, α)	50400	Adjusted Chi Square Value (N/A, β)	50398
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.165	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.165
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0394
Maximum	0.39	Median	0.01
SD	0.0581	CV	1.474
k hat (MLE)	0.847	k star (bias corrected MLE)	0.841
Theta hat (MLE)	0.0466	Theta star (bias corrected MLE)	0.0469
nu hat (MLE)	567.2	nu star (bias corrected)	563.4
MLE Mean (bias corrected)	0.0394	MLE Sd (bias corrected)	0.043
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (563.45, α)	509.4	Adjusted Chi Square Value (563.45, β)	509.2
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0436	95% Gamma Adjusted UCL (use when $n < 50$)	0.0436
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.691	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.892	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.288	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.215	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0844	Mean in Log Scale	-2.622
SD in Original Scale	0.0497	SD in Log Scale	0.547
95% t UCL (assumes normality of ROS data)	0.0888	95% Percentile Bootstrap UCL	0.0889
95% BCA Bootstrap UCL	0.0889	95% Bootstrap t UCL	0.089
95% H-UCL (Log ROS)	0.0891		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.105	Mean in Log Scale	-2.273
SD in Original Scale	0.031	SD in Log Scale	0.192
95% t UCL (Assumes normality)	0.108	95% H-Stat UCL	10.70%
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	0.165	95% KM (% Bootstrap) UCL 0.165

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (volatile organics (ug/l)***dichloromethane (methylene chloride)***75-09-2***ug/l***t)

General Statistics		
Total Number of Observations	335	Number of Distinct Observations 5
Number of Detects	6	Number of Non-Detects 329
Number of Distinct Detects	3	Number of Distinct Non-Detects 2
Minimum Detect	0.31	Minimum Non-Detect 0.29
Maximum Detect	0.61	Maximum Non-Detect 0.54
Variance Detects	0.0143	Percent Non-Detects 98.21%
Mean Detects	0.367	SD Detects 0.12
Median Detects	0.32	CV Detects 0.326
Skewness Detects	2.413	Kurtosis Detects 5.858
Mean of Logged Detects	-1.038	SD of Logged Detects 26.80%

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.561	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.454	Lilliefors GOF Test
5% Lilliefors Critical Value	0.362	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.298	Standard Error of Mean 0.00349
SD	0.0216	95% KM (BCA) UCL N/A
95% KM (t) UCL	0.304	95% KM (Percentile Bootstrap) UCL N/A
95% KM (z) UCL	0.304	95% KM Bootstrap t UCL N/A
90% KM Chebyshev UCL	0.309	95% KM Chebyshev UCL 0.314
97.5% KM Chebyshev UCL	0.32	99% KM Chebyshev UCL 0.333

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.376	Anderson-Darling GOF Test
5% A-D Critical Value	0.698	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.455	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.332	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	14.77	k star (bias corrected MLE) 7.498
Theta hat (MLE)	0.0248	Theta star (bias corrected MLE) 0.0489
nu hat (MLE)	177.3	nu star (bias corrected) 89.97
MLE Mean (bias corrected)	0.367	MLE Sd (bias corrected) 0.134

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	190.3	nu hat (KM) 127489
Approximate Chi Square Value (N/A, α)	126660	Adjusted Chi Square Value (N/A, β) 126656
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.3	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.3

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.197
Maximum	0.61	Median 0.187
SD	0.104	CV 0.527
k hat (MLE)	2.761	k star (bias corrected MLE) 2.738
Theta hat (MLE)	0.0713	Theta star (bias corrected MLE) 0.0719
nu hat (MLE)	1850	nu star (bias corrected) 1835
MLE Mean (bias corrected)	0.197	MLE Sd (bias corrected) 0.119
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1736	Adjusted Chi Square Value (N/A, β) 1736
95% Gamma Approximate UCL (use when $n \geq 50$)	0.208	95% Gamma Adjusted UCL (use when $n < 50$) 0.208

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.585	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.438	Lilliefors GOF Test
5% Lilliefors Critical Value	0.362	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.234	Mean in Log Scale	-1.501
SD in Original Scale	0.0749	SD in Log Scale	0.312
95% t UCL (assumes normality of ROS data)	0.241	95% Percentile Bootstrap UCL	24.10%
95% BCA Bootstrap UCL	0.241	95% Bootstrap t UCL	0.241
95% H-UCL (Log ROS)	0.241		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.267	Mean in Log Scale	-133.00%
SD in Original Scale	0.032	SD in Log Scale	0.135
95% t UCL (Assumes normality)	2.69E-01	95% H-Stat UCL	0.27
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.304	95% KM (% Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (volatile organics (ug/l)***methyl tert-butyl ether (mtbe)***1634-04-4***ug/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	17
Number of Detects	38	Number of Non-Detects	297
Number of Distinct Detects	17	Number of Distinct Non-Detects	1
Minimum Detect	0.16	Minimum Non-Detect	0.16
Maximum Detect	0.6	Maximum Non-Detect	0.16
Variance Detects	0.0189	Percent Non-Detects	88.66%
Mean Detects	0.271	SD Detects	0.137
Median Detects	0.2	CV Detects	0.507
Skewness Detects	1.164	Kurtosis Detects	-0.0717
Mean of Logged Detects	-1.409	SD of Logged Detects	44.30%

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.763	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.33	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.173	Standard Error of Mean	0.0032
SD	0.0577	95% KM (BCA) UCL	0.178
95% KM (t) UCL	0.178	95% KM (Percentile Bootstrap) UCL	0.178
95% KM (z) UCL	0.178	95% KM Bootstrap t UCL	0.179
90% KM Chebyshev UCL	0.182	95% KM Chebyshev UCL	0.187
97.5% KM Chebyshev UCL	0.193	99% KM Chebyshev UCL	0.204

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.102	Anderson-Darling GOF Test	
5% A-D Critical Value	0.751	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.32	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.144	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	4.933	k star (bias corrected MLE)	4.561
Theta hat (MLE)	0.055	Theta star (bias corrected MLE)	0.0595
nu hat (MLE)	374.9	nu star (bias corrected)	346.7
MLE Mean (bias corrected)	0.271	MLE Sd (bias corrected)	0.127

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	8.941	nu hat (KM)	5991
Approximate Chi Square Value (N/A, α)	5812	Adjusted Chi Square Value (N/A, β)	5811
95% Gamma Approximate KM-UCL (use when n>=50)	0.178	95% Gamma Adjusted KM-UCL (use when n<50)	0.178

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	0.044
Maximum	0.6 Median	0.01
SD	0.0949 CV	2.154
k hat (MLE)	0.629 k star (bias corrected MLE)	0.625
Theta hat (MLE)	0.07 Theta star (bias corrected MLE)	0.0704
nu hat (MLE)	421.4 nu star (bias corrected)	418.9
MLE Mean (bias corrected)	0.044 MLE Sd (bias corrected)	0.0557
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (418.94, α)	372.5 Adjusted Chi Square Value (418.94, β)	372.3
95% Gamma Approximate UCL (use when n>=50)	0.0495 95% Gamma Adjusted UCL (use when n<50)	0.0496
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.812 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938 Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.306 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0682 Mean in Log Scale	-3.282
SD in Original Scale	0.0916 SD in Log Scale	1.103
95% t UCL (assumes normality of ROS data)	0.0765 95% Percentile Bootstrap UCL	0.0766
95% BCA Bootstrap UCL	0.0775 95% Bootstrap t UCL	0.0772
95% H-UCL (Log ROS)	0.0789	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.102 Mean in Log Scale	-2.399
SD in Original Scale	0.0761 SD in Log Scale	0.384
95% t UCL (Assumes normality)	0.109 95% H-Stat UCL	0.101
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.178 95% KM (% Bootstrap) UCL	0.178
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (volatile organics (ug/l)***tetrachloroethene (pce)***127-18-4***ug/l***t)		
General Statistics		
Total Number of Observations	335 Number of Distinct Observations	12
Number of Detects	23 Number of Non-Detects	312
Number of Distinct Detects	12 Number of Distinct Non-Detects	1
Minimum Detect	0.18 Minimum Non-Detect	0.18
Maximum Detect	0.73 Maximum Non-Detect	0.18
Variance Detects	0.0189 Percent Non-Detects	93.13%
Mean Detects	0.259 SD Detects	0.138
Median Detects	0.21 CV Detects	0.532
Skewness Detects	2.524 Kurtosis Detects	6.308
Mean of Logged Detects	-1.439 SD of Logged Detects	38.30%
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.61 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.337 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.185 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.185 Standard Error of Mean	0.00226
SD	0.0405 95% KM (BCA) UCL	0.19
95% KM (t) UCL	0.189 95% KM (Percentile Bootstrap) UCL	0.189
95% KM (z) UCL	0.189 95% KM Bootstrap t UCL	0.194
90% KM Chebyshev UCL	0.192 95% KM Chebyshev UCL	0.195
97.5% KM Chebyshev UCL	0.2 99% KM Chebyshev UCL	0.208
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.947 Anderson-Darling GOF Test	
5% A-D Critical Value	0.746 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.299 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.182 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	5.909	k star (bias corrected MLE) 5.167
Theta hat (MLE)	0.0438	Theta star (bias corrected MLE) 0.0501
nu hat (MLE)	271.8	nu star (bias corrected) 237.7
MLE Mean (bias corrected)	0.259	MLE Sd (bias corrected) 0.114

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	20.96	nu hat (KM) 14045
Approximate Chi Square Value (N/A, α)	13771	Adjusted Chi Square Value (N/A, β) 13769
95% Gamma Approximate KM-UCL (use when n>=50)	0.189	95% Gamma Adjusted KM-UCL (use when n<50) 0.189

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.0294
Maximum	0.73	Median 0.01
SD	0.0726	CV 2.473
k hat (MLE)	0.764	k star (bias corrected MLE) 0.76
Theta hat (MLE)	0.0384	Theta star (bias corrected MLE) 0.0387
nu hat (MLE)	512.2	nu star (bias corrected) 509
MLE Mean (bias corrected)	0.0294	MLE Sd (bias corrected) 0.0337
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (508.96, α)	457.6	Adjusted Chi Square Value (508.96, β) 457.4
95% Gamma Approximate UCL (use when n>=50)	0.0327	95% Gamma Adjusted UCL (use when n<50) 0.0327

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.717	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.914	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.277	Lilliefors GOF Test
5% Lilliefors Critical Value	0.185	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0537	Mean in Log Scale -3.483
SD in Original Scale	0.0731	SD in Log Scale 1.061
95% t UCL (assumes normality of ROS data)	0.0603	95% Percentile Bootstrap UCL 0.0605
95% BCA Bootstrap UCL	0.0615	95% Bootstrap t UCL 0.0616
95% H-UCL (Log ROS)	0.0612	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.102	Mean in Log Scale -2.341
SD in Original Scale	0.0554	SD in Log Scale 0.264
95% t UCL (Assumes normality)	0.107	95% H-Stat UCL 0.102
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		

Suggested UCL to Use		
95% KM (t) UCL	0.189	95% KM (% Bootstrap) UCL 0.189

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (volatile organics (ug/l)***toluene***108-88-3***ug/l***t)

General Statistics		
Total Number of Observations	335	Number of Distinct Observations 11
Number of Detects	15	Number of Non-Detects 320
Number of Distinct Detects	9	Number of Distinct Non-Detects 2
Minimum Detect	0.19	Minimum Non-Detect 0.16
Maximum Detect	0.37	Maximum Non-Detect 0.23
Variance Detects	0.00237	Percent Non-Detects 95.52%
Mean Detects	0.265	SD Detects 0.0487
Median Detects	0.27	CV Detects 0.184
Skewness Detects	0.157	Kurtosis Detects 0.352
Mean of Logged Detects	-1.345	SD of Logged Detects 18.80%

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.881	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.144	Lilliefors GOF Test
5% Lilliefors Critical Value	0.229	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.17	Standard Error of Mean	0.00322
SD	0.0258	95% KM (BCA) UCL	0.176
95% KM (t) UCL	0.175	95% KM (Percentile Bootstrap) UCL	0.175
95% KM (z) UCL	0.175	95% KM Bootstrap t UCL	0.179
90% KM Chebyshev UCL	0.179	95% KM Chebyshev UCL	0.184
97.5% KM Chebyshev UCL	0.19	99% KM Chebyshev UCL	0.202

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.439	Anderson-Darling GOF Test	
5% A-D Critical Value	0.735	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.168	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.221	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	31	k star (bias corrected MLE)	24.85
Theta hat (MLE)	0.00854	Theta star (bias corrected MLE)	0.0107
nu hat (MLE)	930.1	nu star (bias corrected)	745.5
MLE Mean (bias corrected)	0.265	MLE Sd (bias corrected)	0.0531

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	43.23	nu hat (KM)	28962
Approximate Chi Square Value (N/A, α)	28567	Adjusted Chi Square Value (N/A, β)	28565
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.172	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.172

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0954
Maximum	0.37	Median	0.0854
SD	0.072	CV	0.755
k hat (MLE)	1.362	k star (bias corrected MLE)	1.352
Theta hat (MLE)	0.07	Theta star (bias corrected MLE)	0.0705
nu hat (MLE)	912.8	nu star (bias corrected)	906
MLE Mean (bias corrected)	0.0954	MLE Sd (bias corrected)	0.082
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (905.96, α)	837.1	Adjusted Chi Square Value (905.96, β)	836.8
95% Gamma Approximate UCL (use when $n \geq 50$)	0.103	95% Gamma Adjusted UCL (use when $n < 50$)	0.103

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.934	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.881	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.176	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.229	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.13	Mean in Log Scale	-2.109
SD in Original Scale	0.0514	SD in Log Scale	0.381
95% t UCL (assumes normality of ROS data)	0.135	95% Percentile Bootstrap UCL	0.135
95% BCA Bootstrap UCL	0.135	95% Bootstrap t UCL	0.135
95% H-UCL (Log ROS)	0.135		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.782	95% H-UCL (KM -Log)	0.171
KM SD (logged)	0.123	95% Critical H Value (KM-Log)	1.664
KM Standard Error of Mean (logged)	0.0177		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.12	Mean in Log Scale	-2.142
SD in Original Scale	0.0337	SD in Log Scale	0.192
95% t UCL (Assumes normality)	0.123	95% H-Stat UCL	0.122
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	0.175	95% KM (Percentile Bootstrap) UCL	0.175

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (volatile organics (ug/l)***total btex (u = 0) (mdl)***+btex_On_mdl***ug/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	39
Number of Detects	71	Number of Non-Detects	264
Number of Distinct Detects	39	Number of Distinct Non-Detects	2
Minimum Detect	0.16	Minimum Non-Detect	0.33
Maximum Detect	1	Maximum Non-Detect	0.35
Variance Detects	0.0339	Percent Non-Detects	78.81%
Mean Detects	0.396	SD Detects	0.184
Median Detects	0.33	CV Detects	0.465
Skewness Detects	1.198	Kurtosis Detects	0.828
Mean of Logged Detects	-1.019	SD of Logged Detects	42.30%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.869	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	2.61E-08	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.169	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.289	Standard Error of Mean	0.0081
SD	0.107	95% KM (BCA) UCL	0.303
95% KM (t) UCL	0.302	95% KM (Percentile Bootstrap) UCL	0.303
95% KM (z) UCL	0.302	95% KM Bootstrap t UCL	0.302
90% KM Chebyshev UCL	0.313	95% KM Chebyshev UCL	0.324
97.5% KM Chebyshev UCL	0.34	99% KM Chebyshev UCL	0.37
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.708	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.149	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.106	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.543	k star (bias corrected MLE)	5.319
Theta hat (MLE)	0.0715	Theta star (bias corrected MLE)	0.0745
nu hat (MLE)	787.2	nu star (bias corrected)	755.2
MLE Mean (bias corrected)	0.396	MLE Sd (bias corrected)	0.172
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	7.289	nu hat (KM)	4884
Approximate Chi Square Value (N/A, α)	4722	Adjusted Chi Square Value (N/A, β)	4722
95% Gamma Approximate KM-UCL (use when n>=50)	0.299	95% Gamma Adjusted KM-UCL (use when n<50)	0.299
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0457	Mean	0.285
Maximum	1	Median	0.266
SD	0.133	CV	0.466
k hat (MLE)	5.061	k star (bias corrected MLE)	5.018
Theta hat (MLE)	0.0562	Theta star (bias corrected MLE)	0.0567
nu hat (MLE)	3391	nu star (bias corrected)	3362
MLE Mean (bias corrected)	0.285	MLE Sd (bias corrected)	0.127
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3228	Adjusted Chi Square Value (N/A, β)	3228
95% Gamma Approximate UCL (use when n>=50)	0.296	95% Gamma Adjusted UCL (use when n<50)	0.296
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.134	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.297	Mean in Log Scale	-1.277
SD in Original Scale	0.118	SD in Log Scale	0.346
95% t UCL (assumes normality of ROS data)	0.308	95% Percentile Bootstrap UCL	0.308
95% BCA Bootstrap UCL	0.309	95% Bootstrap t UCL	0.309
95% H-UCL (Log ROS)	0.306		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	

Mean in Original Scale	0.222	Mean in Log Scale	-1.591
SD in Original Scale	0.124	SD in Log Scale	0.355
95% t UCL (Assumes normality)	0.233	95% H-Stat UCL	0.224
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.302	95% KM (% Bootstrap) UCL	0.303

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (volatile organics (ug/l)***trichloroethene (tce)***79-01-6***ug/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	7
Number of Detects	8	Number of Non-Detects	327
Number of Distinct Detects	7	Number of Distinct Non-Detects	1
Minimum Detect	0.17	Minimum Non-Detect	0.17
Maximum Detect	2.6	Maximum Non-Detect	0.17
Variance Detects	0.92	Percent Non-Detects	97.61%
Mean Detects	0.771	SD Detects	0.959
Median Detects	0.305	CV Detects	1.244
Skewness Detects	1.54	Kurtosis Detects	0.737
Mean of Logged Detects	-0.828	SD of Logged Detects	105.60%

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.66	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.424	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.184	Standard Error of Mean	0.00971
SD	0.166	95% KM (BCA) UCL	0.204
95% KM (t) UCL	0.2	95% KM (Percentile Bootstrap) UCL	0.201
95% KM (z) UCL	0.2	95% KM Bootstrap t UCL	0.328
90% KM Chebyshev UCL	0.213	95% KM Chebyshev UCL	0.227
97.5% KM Chebyshev UCL	0.245	99% KM Chebyshev UCL	0.281

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.136	Anderson-Darling GOF Test	
5% A-D Critical Value	0.735	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.396	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.301	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.014	k star (bias corrected MLE)	0.717
Theta hat (MLE)	0.761	Theta star (bias corrected MLE)	1.076
nu hat (MLE)	16.22	nu star (bias corrected)	11.47
MLE Mean (bias corrected)	0.771	MLE Sd (bias corrected)	0.911

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.229	nu hat (KM)	823.6
Approximate Chi Square Value (823.59, α)	758	Adjusted Chi Square Value (823.59, β)	757.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.2	95% Gamma Adjusted KM-UCL (use when n<50)	0.2

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0282
Maximum	2.6	Median	0.01
SD	0.181	CV	6.43
k hat (MLE)	0.646	k star (bias corrected MLE)	0.642
Theta hat (MLE)	0.0436	Theta star (bias corrected MLE)	0.0439
nu hat (MLE)	433	nu star (bias corrected)	430.4
MLE Mean (bias corrected)	0.0282	MLE Sd (bias corrected)	0.0352
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (430.45, α)	383.3	Adjusted Chi Square Value (430.45, β)	383.2
95% Gamma Approximate UCL (use when n>=50)	0.0316	95% Gamma Adjusted UCL (use when n<50)	0.0317

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.782	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.344	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0212	Mean in Log Scale	-9.778
SD in Original Scale	0.182	SD in Log Scale	3.822
95% t UCL (assumes normality of ROS data)	0.0376	95% Percentile Bootstrap UCL	0.039
95% BCA Bootstrap UCL	0.0508	95% Bootstrap t UCL	0.0953
95% H-UCL (Log ROS)	0.253		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.101	Mean in Log Scale	-2.426
SD in Original Scale	0.174	SD in Log Scale	0.293
95% t UCL (Assumes normality)	0.117	95% H-Stat UCL	0.0948
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.204		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (volatile organics (ug/l)***vinyl chloride***75-01-4***ug/l***)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	325
Number of Distinct Detects	10	Number of Distinct Non-Detects	2
Minimum Detect	0.19	Minimum Non-Detect	0.14
Maximum Detect	0.35	Maximum Non-Detect	0.22
Variance Detects	0.00268	Percent Non-Detects	97.01%
Mean Detects	0.271	SD Detects	0.0517
Median Detects	0.275	CV Detects	0.191
Skewness Detects	0.091	Kurtosis Detects	-0.805
Mean of Logged Detects	-1.322	SD of Logged Detects	19.50%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.969	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.125	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.147	Standard Error of Mean	0.00322
SD	0.026	95% KM (BCA) UCL	0.153
95% KM (t) UCL	0.152	95% KM (Percentile Bootstrap) UCL	0.152
95% KM (z) UCL	0.152	95% KM Bootstrap t UCL	0.16
90% KM Chebyshev UCL	0.156	95% KM Chebyshev UCL	0.161
97.5% KM Chebyshev UCL	0.167	99% KM Chebyshev UCL	0.179
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.186	Anderson-Darling GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	29.92	k star (bias corrected MLE)	21.01
Theta hat (MLE)	0.00906	Theta star (bias corrected MLE)	0.0129
nu hat (MLE)	598.3	nu star (bias corrected)	420.2
MLE Mean (bias corrected)	0.271	MLE Sd (bias corrected)	0.0591
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	31.8	nu hat (KM)	21309
Approximate Chi Square Value (N/A, α)	20971	Adjusted Chi Square Value (N/A, β)	20969
95% Gamma Approximate KM-UCL (use when n>=50)	0.149	95% Gamma Adjusted KM-UCL (use when n<50)	0.149

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	0.0437
Maximum	0.35 Median	0.01
SD	0.0629 CV	1.44
k hat (MLE)	0.817 k star (bias corrected MLE)	0.811
Theta hat (MLE)	0.0535 Theta star (bias corrected MLE)	0.0539
nu hat (MLE)	547.2 nu star (bias corrected)	543.6
MLE Mean (bias corrected)	0.0437 MLE Sd (bias corrected)	0.0485
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (543.59, α)	490.5 Adjusted Chi Square Value (543.59, β)	490.3
95% Gamma Approximate UCL (use when n>=50)	0.0484 95% Gamma Adjusted UCL (use when n<50)	0.0485
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.97 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842 Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.127 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0882 Mean in Log Scale	-2.587
SD in Original Scale	0.0534 SD in Log Scale	0.565
95% t UCL (assumes normality of ROS data)	0.093 95% Percentile Bootstrap UCL	0.0932
95% BCA Bootstrap UCL	0.0932 95% Bootstrap t UCL	0.0934
95% H-UCL (Log ROS)	0.0933	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-1.93 95% H-UCL (KM -Log)	0.148
KM SD (logged)	0.131 95% Critical H Value (KM-Log)	1.665
KM Standard Error of Mean (logged)	0.019	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.113 Mean in Log Scale	-2.202
SD in Original Scale	0.0303 SD in Log Scale	18.50%
95% t UCL (Assumes normality)	0.116 95% H-Stat UCL	0.114
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.152 95% KM (Percentile Bootstrap) UCL	0.152

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Project Information		Financial Summary		Operational Metrics		Compliance & Risk		Human Resources		Logistics & Supply		Customer Engagement		Marketing & Sales		Technology & IT		Legal & Regulatory		Environmental & Safety		Overall Status	
Project ID	Project Name	Budget (USD)	Actual (USD)	Units Produced	Quality Score	Audit Score	Risk Level	Staff Count	Turnover Rate	Inventory Level	Supplier Rating	CSAT Score	Churn Rate	Lead Time (Days)	Conversion Rate (%)	Uptime (%)	Incidents	Compliance Score	Regulatory Updates	Incidents	Safety Score	Phase	Progress (%)
P001	Project Alpha	1000000	980000	12000	95	88	Low	50	5%	5000	92	8.5	2%	15	12%	99.9%	0	98	None	0	99	Initiation	10%
P002	Project Beta	2500000	2600000	25000	92	85	Medium	75	8%	12000	88	7.8	3%	20	15%	99.8%	1	95	Minor	1	98	Planning	25%
P003	Project Gamma	5000000	5100000	50000	90	82	High	100	10%	20000	85	7.5	4%	25	18%	99.7%	2	92	Major	2	97	Execution	40%
P004	Project Delta	7500000	7600000	75000	88	80	Critical	120	12%	30000	82	7.2	5%	30	20%	99.6%	3	90	Severe	3	96	Monitoring	60%
P005	Project Epsilon	10000000	10200000	100000	85	78	Critical	150	15%	40000	80	7.0	6%	35	22%	99.5%	4	88	Severe	4	95	Closing	80%
P006	Project Zeta	15000000	15500000	150000	82	75	Critical	200	18%	50000	78	6.8	7%	40	25%	99.4%	5	85	Severe	5	94	Completed	100%
P007	Project Eta	20000000	21000000	200000	80	72	Critical	250	20%	60000	75	6.5	8%	45	28%	99.3%	6	82	Severe	6	93	Completed	100%
P008	Project Theta	25000000	26000000	250000	78	70	Critical	300	22%	70000	72	6.2	9%	50	30%	99.2%	7	80	Severe	7	92	Completed	100%
P009	Project Iota	30000000	31000000	300000	75	68	Critical	350	25%	80000	70	6.0	10%	55	32%	99.1%	8	78	Severe	8	91	Completed	100%
P010	Project Kappa	35000000	36000000	350000	72	65	Critical	400	28%	90000	68	5.8	11%	60	35%	99.0%	9	75	Severe	9	90	Completed	100%
P011	Project Lambda	40000000	41000000	400000	70	62	Critical	450	30%	100000	65	5.5	12%	65	38%	98.9%	10	72	Severe	10	89	Completed	100%
P012	Project Mu	45000000	46000000	450000	68	60	Critical	500	32%	110000	62	5.2	13%	70	40%	98.8%	11	70	Severe	11	88	Completed	100%
P013	Project Nu	50000000	51000000	500000	65	58	Critical	550	35%	120000	60	5.0	14%	75	42%	98.7%	12	68	Severe	12	87	Completed	100%
P014	Project Xi	55000000	56000000	550000	62	55	Critical	600	38%	130000	58	4.8	15%	80	45%	98.6%	13	65	Severe	13	86	Completed	100%
P015	Project Omicron	60000000	61000000	600000	60	52	Critical	650	40%	140000	55	4.5	16%	85	48%	98.5%	14	62	Severe	14	85	Completed	100%
P016	Project Pi	65000000	66000000	650000	58	50	Critical	700	42%	150000	52	4.2	17%	90	50%	98.4%	15	60	Severe	15	84	Completed	100%
P017	Project Rho	70000000	71000000	700000	55	48	Critical	750	45%	160000	50	4.0	18%	95	52%	98.3%	16	58	Severe	16	83	Completed	100%
P018	Project Sigma	75000000	76000000	750000	52	45	Critical	800	48%	170000	48	3.8	19%	100	55%	98.2%	17	55	Severe	17	82	Completed	100%
P019	Project Tau	80000000	81000000	800000	50	42	Critical	850	50%	180000	45	3.5	20%	105	58%	98.1%	18	52	Severe	18	81	Completed	100%
P020	Project Upsilon	85000000	86000000	850000	48	40	Critical	900	52%	190000	42	3.2	21%	110	60%	98.0%	19	50	Severe	19	80	Completed	100%
P021	Project Phi	90000000	91000000	900000	45	38	Critical	950	55%	200000	40	3.0	22%	115	62%	97.9%	20	48	Severe	20	79	Completed	100%
P022	Project Chi	95000000	96000000	950000	42	35	Critical	1000	58%	210000	38	2.8	23%	120	65%	97.8%	21	45	Severe	21	78	Completed	100%
P023	Project Psi	100000000	101000000	1000000	40	32	Critical	1050	60%	220000	35	2.5	24%	125	68%	97.7%	22	42	Severe	22	77	Completed	100%
P024	Project Omega	105000000	106000000	1050000	38	30	Critical	1100	62%	230000	32	2.2	25%	130	70%	97.6%	23	40	Severe	23	76	Completed	100%
P025	Project A	110000000	111000000	1100000	35	28	Critical	1150	65%	240000	30	2.0	26%	135	72%	97.5%	24	38	Severe	24	75	Completed	100%
P026	Project B	115000000	116000000	1150000	32	25	Critical	1200	68%	250000	28	1.8	27%	140	75%	97.4%	25	35	Severe	25	74	Completed	100%
P027	Project C	120000000	121000000	1200000	30	22	Critical	1250	70%	260000	25	1.5	28%	145	78%	97.3%	26	32	Severe	26	73	Completed	100%
P028	Project D	125000000	126000000	1250000	28	20	Critical	1300	72%	270000	22	1.2	29%	150	80%	97.2%	27	30	Severe	27	72	Completed	100%
P029	Project E	130000000	131000000	1300000	25	18	Critical	1350	75%	280000	20	1.0	30%	155	82%	97.1%	28	28	Severe	28	71	Completed	100%
P030	Project F	135000000	136000000	1350000	22	15	Critical	1400	78%	290000	18	0.8	31%	160	85%	97.0%	29	25	Severe	29	70	Completed	100%
P031	Project G	140000000	141000000	1400000	20	12	Critical	1450	80%	300000	15	0.5	32%	165	88%	96.9%	30	22	Severe	30	69	Completed	100%
P032	Project H	145000000	146000000	1450000	18	10	Critical	1500	82%	310000	12	0.2	33%	170	90%	96.8%	31	20	Severe	31	68	Completed	100%
P033	Project I	150000000	151000000	1500000	15	8	Critical	1550	85%	320000	10	0.1	34%	175	92%	96.7%	32	18	Severe	32	67	Completed	100%
P034	Project J	155000000	156000000	1550000	12	5	Critical	1600	88%	330000	8	0.0	35%	180	95%	96.6%	33	15	Severe	33	66	Completed	100%
P035	Project K	160000000	161000000	1600000	10	3	Critical	1650	90%	340000	5	0.0	36%	185	98%	96.5%	34	12	Severe	34	65	Completed	100%
P036	Project L	165000000	166000000	1650000	8	2	Critical	1700	92%	350000	3	0.0	37%	190	100%	96.4%	35	10	Severe	35	64	Completed	100%
P037	Project M	170000000	171000000	1700000	5	1	Critical	1750	95%	360000	1	0.0	38%	195	100%	96.3%	36	8	Severe	36	63	Completed	100%
P038	Project N	175000000	176000000	1750000	3	0	Critical	1800	98%	370000	0	0.0	39%	200	100%	96.2%	37	5	Severe	37	62	Completed	100%
P039	Project O	180000000	181000000	1800000	2	0	Critical	1850	100%	380000	0	0.0	40%	205	100%	96.1%	38	3	Severe	38	61	Completed	100%
P040	Project P	185000000	186000000	1850000	1	0	Critical	1900	100%	390000	0	0.0	41%	210	100%	96.0%	39	2	Severe	39	60	Completed	100%
P041	Project Q	190000000	191000000	1900000	0	0	Critical	1950	100%	400000	0	0.0	42%	215	100%	95.9%	40	1	Severe	40	59	Completed	100%
P042	Project R	195000000	196000000	1950000	0	0	Critical	2000	100%	410000	0	0.0	43%	220	100%	95.8%	41	0	Severe	41	58	Completed	100%
P043	Project S	200000000	201000000	2000000	0	0	Critical	2050	100%	420000	0	0.0	44%	225	100%	95.7%	42	0	Severe	42	57	Completed	100%
P044	Project T	205000000	206000000	2050000	0	0	Critical	2100	100%	430000	0	0.0	45%	230	100%	95.6%	43	0	Severe	43	56	Completed	100%
P045	Project U	210000000	211000000	2100000	0	0	Critical	2150	100%	440000	0	0.0	46%	235	100%	95.5%	44	0	Severe	44	55	Completed	100%
P046	Project V	215000000	216000000	2150000	0	0	Critical	2200	100%	450000	0	0.0	47%	240	100%	95.4%	45	0	Severe	45	54	Completed	100%
P047	Project W	220000000	221000000	2200000	0	0	Critical	2250	100%	460000	0	0.0	48%	245	100%	95.3%	46	0	Severe	46	53	Completed	100%
P048	Project X	225000000	226000000	2250000	0	0	Critical	2300	100%	470000	0	0.0	49%	250	100%	95.2%	47	0	Severe	47	52	Completed	100%
P049	Project Y	230000000	231000000	2300000	0	0	Critical	2350	100%	480000	0	0.0	50%	255	100%	95.1%	48	0	Severe	48	51	Completed	100%
P050	Project Z	235000000	236000000	2350000	0	0	Critical	2400	100%	490000	0	0.0	51%	260	100%	95.0%	49	0	Severe	49	50	Completed	100%
P051	Project A	240000000	241000000	2400000	0	0	Critical	2450	100%	500000	0	0.0	52%	265	100%	94.9%	50	0	Severe	50	49	Completed	100%
P052	Project B	245000000	246000000	2450000	0	0	Critical	2500	100%	510000	0	0.0	53%	270	100%	94.8%	51	0	Severe	51	48	Completed	100%
P053	Project C	250000000	251000000	2500000	0	0	Critical	2550	100%	520000	0	0.0	54%	275	100%	94.7%	52	0	Severe	52	47	Completed	100%
P054	Project D	255000000	256000000	2550000	0	0	Critical	2600	100%	530000	0	0.0	55%	280	100%	94.6%	53	0	Severe	53	46	Completed	100%
P055	Project E	260000000	261000000	2600000	0	0	Critical	2650	100%	540000	0	0.0	56%	285	100%	94.5%	54	0	Severe	54	45	Completed	100%
P056	Project F	265000000	266000000	2650000	0	0	Critical	2700	100%	550000	0	0.0	57%	290	100%	94.4%	55	0	Severe	55	44	Completed	100%
P057	Project G	270000000	271000000	2700000	0	0	Critical	2750	100%	560000	0	0.0	58%	295	100%	94.3%	56	0	Severe	56	43	Completed	100%
P058	Project H	275000000	276000000	2750000	0	0	Critical	2800	100%	570000	0	0.0	59%	300	100%	94.2%	57	0	Severe	57	42	Completed	100%
P059	Project I	280000000	281000000	2800000	0	0	Critical	2850	100%	580000	0	0.0	60%	305	100%	94.1%	58	0	Severe	58	41	Completed	100%
P060	Project J	285000000	286000000	2850000	0	0	Critical	2900	100%	590000	0	0.0	61%	310	100%	94.0%	59	0	Severe	59	40	Completed	100%
P061																							

UCL Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	12/27/2016 14:25
From File	NCP1P2_SurfaceWater_wKM20161222_STUDY_AREA_161227_RISK.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

RESULT_VALUE (conventional parameters (mg/l)***alkalinity, total as calcium carbonate (caco3)***talk***mg/l***t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	58
		Number of Missing Observations	0
Minimum	72	Mean	106
Maximum	400	Median	100
SD	23.81	Std. Error of Mean	1.252
Coefficient of Variation	0.225	Skewness	8.005

Normal GOF Test

Shapiro Wilk Test Statistic	0.422	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.325	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	108	95% Adjusted-CLT UCL (Chen-1995)	108.6
		95% Modified-t UCL (Johnson-1978)	108.1

Gamma GOF Test

A-D Test Statistic	2.76E+28	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.281	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics

k hat (MLE)	36.79	k star (bias corrected MLE)	36.49
Theta hat (MLE)	2.88	Theta star (bias corrected MLE)	2.904
nu hat (MLE)	26635	nu star (bias corrected)	26416
MLE Mean (bias corrected)	106	MLE Sd (bias corrected)	17.54
		Approximate Chi Square Value (0.05)	26039
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	26037

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	107.5	95% Adjusted Gamma UCL (use when n<50)	107.5
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.636	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.255	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		

Lognormal Statistics

Minimum of Logged Data	4.277	Mean of logged Data	4.649
Maximum of Logged Data	5.991	SD of logged Data	0.145

Assuming Lognormal Distribution

95% H-UCL	107	90% Chebyshev (MVUE) UCL	108.1
95% Chebyshev (MVUE) UCL	109.2	97.5% Chebyshev (MVUE) UCL	110.7
99% Chebyshev (MVUE) UCL	113.7		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	108	95% Jackknife UCL	108
95% Standard Bootstrap UCL	108	95% Bootstrap-t UCL	109
95% Hall's Bootstrap UCL	110.1	95% Percentile Bootstrap UCL	108.1
95% BCA Bootstrap UCL	108.6		
90% Chebyshev(Mean, Sd) UCL	109.7	95% Chebyshev(Mean, Sd) UCL	111.4
97.5% Chebyshev(Mean, Sd) UCL	113.8	99% Chebyshev(Mean, Sd) UCL	118.4

Suggested UCL to Use

95% Student's-t UCL	108	or 95% Modified-t UCL	108.1
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters (mg/l)***ammonia as nitrogen***7664-41-7n***mg/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 274
Number of Detects	341	Number of Non-Detects 21
Number of Distinct Detects	264	Number of Distinct Non-Detects 10
Minimum Detect	0.033	Minimum Non-Detect 0.075
Maximum Detect	4.22	Maximum Non-Detect 0.287
Variance Detects	0.142	Percent Non-Detects 5.80%
Mean Detects	0.513	SD Detects 0.376
Median Detects	0.469	CV Detects 0.734
Skewness Detects	5.218	Kurtosis Detects 39.5
Mean of Logged Detects	-0.84	SD of Logged Detects 0.619
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.613	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.203	Lilliefors GOF Test
5% Lilliefors Critical Value	0.048	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.487	Standard Error of Mean 0.02
SD	0.38	95% KM (BCA) UCL 0.52
95% KM (t) UCL	0.52	95% KM (Percentile Bootstrap) UCL 0.522
95% KM (z) UCL	0.52	95% KM Bootstrap t UCL 0.527
90% KM Chebyshev UCL	0.547	95% KM Chebyshev UCL 0.574
97.5% KM Chebyshev UCL	0.612	99% KM Chebyshev UCL 0.686
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	10.47	Anderson-Darling GOF Test
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.116	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0496	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.064	k star (bias corrected MLE) 3.039
Theta hat (MLE)	0.167	Theta star (bias corrected MLE) 0.169
nu hat (MLE)	2090	nu star (bias corrected) 2073
MLE Mean (bias corrected)	0.513	MLE Sd (bias corrected) 0.294
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.642	nu hat (KM) 1189
Approximate Chi Square Value (N/A, α)	1110	Adjusted Chi Square Value (N/A, β) 1110
95% Gamma Approximate KM-UCL (use when n>=50)	0.521	95% Gamma Adjusted KM-UCL (use when n<50) 0.521
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.487
Maximum	4.22	Median 0.461
SD	0.38	CV 0.78
k hat (MLE)	2.253	k star (bias corrected MLE) 2.236
Theta hat (MLE)	0.216	Theta star (bias corrected MLE) 0.218
nu hat (MLE)	1631	nu star (bias corrected) 1619
MLE Mean (bias corrected)	0.487	MLE Sd (bias corrected) 0.326
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1526	Adjusted Chi Square Value (N/A, β) 1526
95% Gamma Approximate UCL (use when n>=50)	0.516	95% Gamma Adjusted UCL (use when n<50) 0.516
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.145	Lilliefors GOF Test
5% Lilliefors Critical Value	0.048	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.491	Mean in Log Scale -0.906
SD in Original Scale	0.376	SD in Log Scale 0.658
95% t UCL (assumes normality of ROS data)	0.524	95% Percentile Bootstrap UCL 0.525
95% BCA Bootstrap UCL	0.528	95% Bootstrap t UCL 0.531
95% H-UCL (Log ROS)	0.536	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.486 Mean in Log Scale	-0.964
SD in Original Scale	0.381 SD in Log Scale	0.79
95% t UCL (Assumes normality)	0.519 95% H-Stat UCL	0.565
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.52

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters (mg/l)***ammonia unionized***7664-41-7ui***mg/l***t)

General Statistics		
Total Number of Observations	335	Number of Distinct Observations 335
Number of Detects	314	Number of Non-Detects 21
Number of Distinct Detects	314	Number of Distinct Non-Detects 21
Minimum Detect	4.55E-04	Minimum Non-Detect 3.88E-04
Maximum Detect	0.0305	Maximum Non-Detect 0.019
Variance Detects	6.85E-06	Percent Non-Detects 6.27%
Mean Detects	0.00395	SD Detects 0.00262
Median Detects	0.0035	CV Detects 0.662
Skewness Detects	4.753	Kurtosis Detects 39.61
Mean of Logged Detects	-5.678	SD of Logged Detects 0.533

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.714	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.151	Lilliefors GOF Test
5% Lilliefors Critical Value	0.05	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00389	Standard Error of Mean 1.42E-04
SD	0.00257	95% KM (BCA) UCL 0.00413
95% KM (t) UCL	0.00412	95% KM (Percentile Bootstrap) UCL 0.00414
95% KM (z) UCL	0.00412	95% KM Bootstrap t UCL 0.00417
90% KM Chebyshev UCL	0.00431	95% KM Chebyshev UCL 0.00451
97.5% KM Chebyshev UCL	0.00477	99% KM Chebyshev UCL 0.0053

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.281	Anderson-Darling GOF Test
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0767	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0514	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	3.622	k star (bias corrected MLE) 3.59
Theta hat (MLE)	0.00109	Theta star (bias corrected MLE) 0.0011
nu hat (MLE)	2275	nu star (bias corrected) 2254
MLE Mean (bias corrected)	0.00395	MLE Sd (bias corrected) 0.00209

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.283	nu hat (KM) 1530
Approximate Chi Square Value (N/A, α)	1440	Adjusted Chi Square Value (N/A, β) 1440
95% Gamma Approximate KM-UCL (use when n>=50)	0.00413	95% Gamma Adjusted KM-UCL (use when n<50) 0.00413

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	4.55E-04	Mean	0.00433
Maximum	0.0305	Median	0.0036
SD	0.00293	CV	0.676
k hat (MLE)	3.12	k star (bias corrected MLE)	3.094
Theta hat (MLE)	0.00139	Theta star (bias corrected MLE)	0.0014
nu hat (MLE)	2090	nu star (bias corrected)	2073
MLE Mean (bias corrected)	0.00433	MLE Sd (bias corrected)	0.00246
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1968	Adjusted Chi Square Value (N/A, β)	1968
95% Gamma Approximate UCL (use when n>=50)	0.00456	95% Gamma Adjusted UCL (use when n<50)	0.00456

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0485	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.05	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00388	Mean in Log Scale	-5.695
SD in Original Scale	0.00256	SD in Log Scale	0.528
95% t UCL (assumes normality of ROS data)	0.00411	95% Percentile Bootstrap UCL	0.00412
95% BCA Bootstrap UCL	0.00414	95% Bootstrap t UCL	0.00417
95% H-UCL (Log ROS)	0.00407		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.699	95% H-UCL (KM -Log)	0.00411
KM SD (logged)	0.547	95% Critical H Value (KM-Log)	1.816
KM Standard Error of Mean (logged)	0.0306		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00393	Mean in Log Scale	-5.693
SD in Original Scale	0.0026	SD in Log Scale	0.561
95% t UCL (Assumes normality)	0.00416	95% H-Stat UCL	0.00417
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00413		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (conventional parameters (mg/l)***biochemical oxygen demand (bod-30)***bod_30***mg/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	#####
Number of Detects	361	Number of Non-Detects	1
Number of Distinct Detects	273	Number of Distinct Non-Detects	1
Minimum Detect	2.83	Minimum Non-Detect	6
Maximum Detect	77.4	Maximum Non-Detect	6
Variance Detects	53.81	Percent Non-Detects	0.28%
Mean Detects	10.66	SD Detects	7.335
Median Detects	8.8	CV Detects	0.688
Skewness Detects	3.477	Kurtosis Detects	22.75
Mean of Logged Detects	2.201	SD of Logged Detects	0.555
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.763	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	1.54E-01	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	10.64	Standard Error of Mean	0.385
SD	7.322	95% KM (BCA) UCL	11.31
95% KM (t) UCL	11.28	95% KM (Percentile Bootstrap) UCL	11.29
95% KM (z) UCL	11.28	95% KM Bootstrap t UCL	11.38
90% KM Chebyshev UCL	11.8	95% KM Chebyshev UCL	12.32
97.5% KM Chebyshev UCL	13.05	99% KM Chebyshev UCL	14.48
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.576	Anderson-Darling GOF Test	
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.074	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0482	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.185	k star (bias corrected MLE)	3.16
Theta hat (MLE)	3.347	Theta star (bias corrected MLE)	3.373
nu hat (MLE)	2299	nu star (bias corrected)	2281
MLE Mean (bias corrected)	10.66	MLE Sd (bias corrected)	5.997
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.113	nu hat (KM)	1530

Approximate Chi Square Value (N/A, α)	1440	Adjusted Chi Square Value (N/A, β)	1440
95% Gamma Approximate KM-UCL (use when n>=50)	11.31	95% Gamma Adjusted KM-UCL (use when n<50)	11.31
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.83	Mean	10.64
Maximum	77.4	Median	8.795
SD	7.334	CV	0.689
k hat (MLE)	3.172	k star (bias corrected MLE)	3.147
Theta hat (MLE)	3.355	Theta star (bias corrected MLE)	3.381
nu hat (MLE)	2296	nu star (bias corrected)	2279
MLE Mean (bias corrected)	10.64	MLE Sd (bias corrected)	5.998
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2169	Adjusted Chi Square Value (N/A, β)	2168
95% Gamma Approximate UCL (use when n>=50)	11.18	95% Gamma Adjusted UCL (use when n<50)	11.18
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0532	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	10.64	Mean in Log Scale	2.2
SD in Original Scale	7.331	SD in Log Scale	0.555
95% t UCL (assumes normality of ROS data)	11.28	95% Percentile Bootstrap UCL	11.32
95% BCA Bootstrap UCL	11.37	95% Bootstrap t UCL	11.36
95% H-UCL (Log ROS)	11.1		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	10.64	Mean in Log Scale	2.198
SD in Original Scale	7.336	SD in Log Scale	0.557
95% t UCL (Assumes normality)	11.27	95% H-Stat UCL	11.1
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	11.31		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (conventional parameters (mg/l)***biochemical oxygen demand (bod-5)***bod_5***mg/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	#####
Number of Detects	221	Number of Non-Detects	141
Number of Distinct Detects	188	Number of Distinct Non-Detects	2
Minimum Detect	2.01	Minimum Non-Detect	2
Maximum Detect	49.7	Maximum Non-Detect	6
Variance Detects	26.84	Percent Non-Detects	38.95%
Mean Detects	5.505	SD Detects	5.181
Median Detects	4.42	CV Detects	0.941
Skewness Detects	5.233	Kurtosis Detects	35.12
Mean of Logged Detects	1.506	SD of Logged Detects	0.569
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.546	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.25	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0596	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.165	Standard Error of Mean	0.231
SD	4.38	95% KM (BCA) UCL	4.593
95% KM (t) UCL	4.546	95% KM (Percentile Bootstrap) UCL	4.558
95% KM (z) UCL	4.545	95% KM Bootstrap t UCL	4.63
90% KM Chebyshev UCL	4.858	95% KM Chebyshev UCL	5.172
97.5% KM Chebyshev UCL	5.608	99% KM Chebyshev UCL	6.464
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.516	Anderson-Darling GOF Test	

5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.117	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0618	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.655	k star (bias corrected MLE) 2.622
Theta hat (MLE)	2.073	Theta star (bias corrected MLE) 2.1
nu hat (MLE)	1174	nu star (bias corrected) 1159
MLE Mean (bias corrected)	5.505	MLE Sd (bias corrected) 3.4
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.904	nu hat (KM) 654.6
Approximate Chi Square Value (654.58, α)	596.2	Adjusted Chi Square Value (654.58, β) 596
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	4.573	95% Gamma Adjusted KM-UCL (use when $n < 50$) 4.574
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 3.418
Maximum	49.7	Median 2.585
SD	4.834	CV 1.414
k hat (MLE)	0.351	k star (bias corrected MLE) 0.35
Theta hat (MLE)	9.741	Theta star (bias corrected MLE) 9.771
nu hat (MLE)	254.1	nu star (bias corrected) 253.3
MLE Mean (bias corrected)	3.418	MLE Sd (bias corrected) 5.779
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (253.29, α)	217.4	Adjusted Chi Square Value (253.29, β) 217.3
95% Gamma Approximate UCL (use when $n \geq 50$)	3.982	95% Gamma Adjusted UCL (use when $n < 50$) 3.984
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0777	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0596	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3.88	Mean in Log Scale 0.988
SD in Original Scale	4.546	SD in Log Scale 0.843
95% t UCL (assumes normality of ROS data)	4.274	95% Percentile Bootstrap UCL 4.289
95% BCA Bootstrap UCL	4.371	95% Bootstrap t UCL 4.354
95% H-UCL (Log ROS)	4.187	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	3.811	Mean in Log Scale 0.953
SD in Original Scale	4.581	SD in Log Scale 0.844
95% t UCL (Assumes normality)	4.208	95% H-Stat UCL 4.045
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	4.593	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (conventional parameters (mg/l)***bromide***24959-67-9***mg/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 78
		Number of Missing Observations 0
Minimum	11.2	Mean 37.76
Maximum	93	Median 38
SD	7.005	Std. Error of Mean 0.368
Coefficient of Variation	0.185	Skewness 1.584
Normal GOF Test		
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.104	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	38.37	95% Adjusted-CLT UCL (Chen-1995)	38.4
		95% Modified-t UCL (Johnson-1978)	38.38
Gamma GOF Test			
A-D Test Statistic	2.62	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0796	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	30.52	k star (bias corrected MLE)	30.27
Theta hat (MLE)	1.237	Theta star (bias corrected MLE)	1.248
nu hat (MLE)	22097	nu star (bias corrected)	21915
MLE Mean (bias corrected)	37.76	MLE Sd (bias corrected)	6.864
		Approximate Chi Square Value (0.05)	21572
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	21570
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	38.37	95% Adjusted Gamma UCL (use when n<50)	38.37
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.967	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.77E-05	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0813	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.416	Mean of logged Data	3.615
Maximum of Logged Data	4.533	SD of logged Data	0.183
Assuming Lognormal Distribution			
95% H-UCL	38.39	90% Chebyshev (MVUE) UCL	38.88
95% Chebyshev (MVUE) UCL	39.38	97.5% Chebyshev (MVUE) UCL	40.07
99% Chebyshev (MVUE) UCL	41.43		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	38.37	95% Jackknife UCL	38.37
95% Standard Bootstrap UCL	38.37	95% Bootstrap-t UCL	38.36
95% Hall's Bootstrap UCL	38.39	95% Percentile Bootstrap UCL	38.37
95% BCA Bootstrap UCL	38.4		
90% Chebyshev(Mean, Sd) UCL	38.87	95% Chebyshev(Mean, Sd) UCL	39.37
97.5% Chebyshev(Mean, Sd) UCL	40.06	99% Chebyshev(Mean, Sd) UCL	41.43
Suggested UCL to Use			
95% Student's-t UCL	38.37	or 95% Modified-t UCL	38.38
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (conventional parameters (mg/l)***chloride***16887-00-6***mg/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	49
		Number of Missing Observations	0
Minimum	4570	Mean	13108
Maximum	19000	Median	13000
SD	1.79E+03	Std. Error of Mean	93.94
Coefficient of Variation	0.136	Skewness	-0.531
Normal GOF Test			
Shapiro Wilk Test Statistic	0.952	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	9.45E-13	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.143	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	13263	95% Adjusted-CLT UCL (Chen-1995)	13259
		95% Modified-t UCL (Johnson-1978)	13262

Gamma GOF Test		
A-D Test Statistic	8.008	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.165	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	48.36	k star (bias corrected MLE)
Theta hat (MLE)	271	Theta star (bias corrected MLE)
nu hat (MLE)	35015	nu star (bias corrected)
MLE Mean (bias corrected)	13108	MLE Sd (bias corrected)
		Approximate Chi Square Value (0.05)
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	13273	95% Adjusted Gamma UCL (use when n<50)
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.894	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.177	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	8.427	Mean of logged Data
Maximum of Logged Data	9.852	SD of logged Data
Assuming Lognormal Distribution		
95% H-UCL	13293	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	13571	97.5% Chebyshev (MVUE) UCL
99% Chebyshev (MVUE) UCL	14151	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	13262	95% Jackknife UCL
95% Standard Bootstrap UCL	13263	95% Bootstrap-t UCL
95% Hall's Bootstrap UCL	13263	95% Percentile Bootstrap UCL
95% BCA Bootstrap UCL	13259	
90% Chebyshev(Mean, Sd) UCL	13390	95% Chebyshev(Mean, Sd) UCL
97.5% Chebyshev(Mean, Sd) UCL	13694	99% Chebyshev(Mean, Sd) UCL
Suggested UCL to Use		
95% Student's-t UCL	13263	or 95% Modified-t UCL
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.		
RESULT_VALUE (conventional parameters (mg/l)***cyanide***57-12-5***mg/l****t)		
General Statistics		
Total Number of Observations	3.62E+02	Number of Distinct Observations
Number of Detects	222	Number of Non-Detects
Number of Distinct Detects	20	Number of Distinct Non-Detects
Minimum Detect	0.001	Minimum Non-Detect
Maximum Detect	0.052	Maximum Non-Detect
Variance Detects	2.04E-05	Percent Non-Detects
Mean Detects	0.00338	SD Detects
Median Detects	0.002	CV Detects
Skewness Detects	7.752	Kurtosis Detects
Mean of Logged Detects	-5.929	SD of Logged Detects
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.365	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.326	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0595	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00303	Standard Error of Mean

SD	0.0036	95% KM (BCA) UCL	0.00335
95% KM (t) UCL	0.00335	95% KM (Percentile Bootstrap) UCL	0.00338
95% KM (z) UCL	0.00335	95% KM Bootstrap t UCL	0.00355
90% KM Chebyshev UCL	0.00361	95% KM Chebyshev UCL	0.00387
97.5% KM Chebyshev UCL	0.00424	99% KM Chebyshev UCL	0.00495

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	22.78	Anderson-Darling GOF Test	
5% A-D Critical Value	0.765	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.274	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0618	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	2.248	k star (bias corrected MLE)	2.221
Theta hat (MLE)	0.0015	Theta star (bias corrected MLE)	0.00152
nu hat (MLE)	998.3	nu star (bias corrected)	986.1
MLE Mean (bias corrected)	0.00338	MLE Sd (bias corrected)	0.00227

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.706	nu hat (KM)	511.1
Approximate Chi Square Value (511.14, α)	459.7	Adjusted Chi Square Value (511.14, β)	459.5
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00337	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00337

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.001	Mean	0.00594
Maximum	0.052	Median	0.004
SD	0.00479	CV	0.806
k hat (MLE)	1.869	k star (bias corrected MLE)	1.856
Theta hat (MLE)	0.00318	Theta star (bias corrected MLE)	0.0032
nu hat (MLE)	1353	nu star (bias corrected)	1344
MLE Mean (bias corrected)	0.00594	MLE Sd (bias corrected)	0.00436
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1259	Adjusted Chi Square Value (N/A, β)	1259
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00634	95% Gamma Adjusted UCL (use when $n < 50$)	0.00634

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.281	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0595	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00308	Mean in Log Scale	-5.968
SD in Original Scale	0.00361	SD in Log Scale	0.509
95% t UCL (assumes normality of ROS data)	0.00339	95% Percentile Bootstrap UCL	0.00343
95% BCA Bootstrap UCL	0.00351	95% Bootstrap t UCL	0.00361
95% H-UCL (Log ROS)	0.00306		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00305	Mean in Log Scale	-5.95
SD in Original Scale	0.00357	SD in Log Scale	0.441
95% t UCL (Assumes normality)	0.00336	95% H-Stat UCL	0.00299
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	0.00335
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters (mg/l)***hardness as ca and mg***hardca_mg/l***t)

General Statistics

Total Number of Observations	335	Number of Distinct Observations	27
		Number of Missing Observations	0
Minimum	2300	Mean	4076
Maximum	5400	Median	4100
SD	4.25E+02	Std. Error of Mean	23.22
Coefficient of Variation	0.104	Skewness	-0.692

Normal GOF Test		
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	4.66E-15	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.136	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0484	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	4114	95% Adjusted-CLT UCL (Chen-1995) 4113
		95% Modified-t UCL (Johnson-1978) 4114
Gamma GOF Test		
A-D Test Statistic	6.933	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.153	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0495	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	85.14	k star (bias corrected MLE) 84.38
Theta hat (MLE)	47.88	Theta star (bias corrected MLE) 48.31
nu hat (MLE)	57042	nu star (bias corrected) 56532
MLE Mean (bias corrected)	4076	MLE Sd (bias corrected) 443.7
		Approximate Chi Square Value (0.05) 55980
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value 55978
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	4116	95% Adjusted Gamma UCL (use when n<50) 4116
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.161	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0484	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	7.741	Mean of logged Data 8.307
Maximum of Logged Data	8.594	SD of logged Data 0.111
Assuming Lognormal Distribution		
95% H-UCL	4119	90% Chebyshev (MVUE) UCL 4152
95% Chebyshev (MVUE) UCL	4186	97.5% Chebyshev (MVUE) UCL 4233
99% Chebyshev (MVUE) UCL	4325	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	4114	95% Jackknife UCL 4114
95% Standard Bootstrap UCL	4114	95% Bootstrap-t UCL 4114
95% Hall's Bootstrap UCL	4113	95% Percentile Bootstrap UCL 4116
95% BCA Bootstrap UCL	4114	
90% Chebyshev(Mean, Sd) UCL	4146	95% Chebyshev(Mean, Sd) UCL 4177
97.5% Chebyshev(Mean, Sd) UCL	4221	99% Chebyshev(Mean, Sd) UCL 4307
Suggested UCL to Use		
95% Student's-t UCL	4114	or 95% Modified-t UCL 4114
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.		
RESULT_VALUE (conventional parameters (mg/l)***hardness as caco3***hardca***mg/l***t)		
General Statistics		
Total Number of Observations	27	Number of Distinct Observations 17
		Number of Missing Observations 0
Minimum	1600	Mean 3185
Maximum	4100	Median 3200
SD	752.8	Std. Error of Mean 144.9
Coefficient of Variation	0.236	Skewness -0.392

Normal GOF Test			
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.154	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171	Data appear Normal at 5% Significance Level	
Data appear Approximate Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3432	95% Adjusted-CLT UCL (Chen-1995)	
		95% Modified-t UCL (Johnson-1978)	
Gamma GOF Test			
A-D Test Statistic	0.753	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.744	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.167	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.168	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	16.58	k star (bias corrected MLE)	14.76
Theta hat (MLE)	192.1	Theta star (bias corrected MLE)	215.8
nu hat (MLE)	895.2	nu star (bias corrected)	797
MLE Mean (bias corrected)	3185	MLE Sd (bias corrected)	829.1
		Approximate Chi Square Value (0.05)	732.5
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	728.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	3466	95% Adjusted Gamma UCL (use when n<50)	3484
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.166	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.378	Mean of logged Data	8.036
Maximum of Logged Data	8.319	SD of logged Data	0.261
Assuming Lognormal Distribution			
95% H-UCL	3503	90% Chebyshev (MVUE) UCL	3678
95% Chebyshev (MVUE) UCL	3898	97.5% Chebyshev (MVUE) UCL	4204
99% Chebyshev (MVUE) UCL	4804		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3423	95% Jackknife UCL	3432
95% Standard Bootstrap UCL	3427	95% Bootstrap-t UCL	3418
95% Hall's Bootstrap UCL	3414	95% Percentile Bootstrap UCL	3426
95% BCA Bootstrap UCL	3411		
90% Chebyshev(Mean, Sd) UCL	3620	95% Chebyshev(Mean, Sd) UCL	3817
97.5% Chebyshev(Mean, Sd) UCL	4090	99% Chebyshev(Mean, Sd) UCL	4627
Suggested UCL to Use			
95% Student's-t UCL	3432		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE (conventional parameters (mg/l)***nitrate + nitrite as nitrogen***no2no3***mg/l****t)			
General Statistics			
Total Number of Observations	361	Number of Distinct Observations	7400.00%
Number of Detects	329	Number of Non-Detects	32
Number of Distinct Detects	74	Number of Distinct Non-Detects	11
Minimum Detect	0.02	Minimum Non-Detect	0.1
Maximum Detect	3.8	Maximum Non-Detect	0.4
Variance Detects	0.0926	Percent Non-Detects	8.86%
Mean Detects	0.403	SD Detects	0.304
Median Detects	0.4	CV Detects	0.754
Skewness Detects	6.522	Kurtosis Detects	64.27

Mean of Logged Detects	-1.116	SD of Logged Detects	0.736
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.595	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.186	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0488	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.375	Standard Error of Mean	0.0161
SD	0.305	95% KM (BCA) UCL	0.405
95% KM (t) UCL	0.401	95% KM (Percentile Bootstrap) UCL	0.401
95% KM (z) UCL	0.401	95% KM Bootstrap t UCL	0.409
90% KM Chebyshev UCL	0.423	95% KM Chebyshev UCL	0.445
97.5% KM Chebyshev UCL	0.475	99% KM Chebyshev UCL	0.535
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	9.681	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.116	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0506	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.553	k star (bias corrected MLE)	2.532
Theta hat (MLE)	0.158	Theta star (bias corrected MLE)	0.159
nu hat (MLE)	1680	nu star (bias corrected)	1666
MLE Mean (bias corrected)	0.403	MLE Sd (bias corrected)	0.254
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.511	nu hat (KM)	1091
Approximate Chi Square Value (N/A, α)	1015	Adjusted Chi Square Value (N/A, β)	1015
95% Gamma Approximate KM-UCL (use when n>=50)	0.403	95% Gamma Adjusted KM-UCL (use when n<50)	0.403
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0164	Mean	0.377
Maximum	3.8	Median	0.37
SD	0.303	CV	0.804
k hat (MLE)	2.135	k star (bias corrected MLE)	2.119
Theta hat (MLE)	0.177	Theta star (bias corrected MLE)	0.178
nu hat (MLE)	1541	nu star (bias corrected)	1530
MLE Mean (bias corrected)	0.377	MLE Sd (bias corrected)	0.259
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1440	Adjusted Chi Square Value (N/A, β)	1440
95% Gamma Approximate UCL (use when n>=50)	0.4	95% Gamma Adjusted UCL (use when n<50)	0.401
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.152	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0488	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.378	Mean in Log Scale	-1.214
SD in Original Scale	0.302	SD in Log Scale	0.775
95% t UCL (assumes normality of ROS data)	0.404	95% Percentile Bootstrap UCL	0.405
95% BCA Bootstrap UCL	0.409	95% Bootstrap t UCL	0.413
95% H-UCL (Log ROS)	0.434		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.375	Mean in Log Scale	-1.25
SD in Original Scale	0.305	SD in Log Scale	0.837
95% t UCL (Assumes normality)	0.401	95% H-Stat UCL	0.444
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.405		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters (mg/l)***nitrogen (total kjeldahl) as nitrogen***kn***mg/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	#####
Number of Detects	321	Number of Non-Detects	41
Number of Distinct Detects	102	Number of Distinct Non-Detects	24
Minimum Detect	0.324	Minimum Non-Detect	0.3
Maximum Detect	5.4	Maximum Non-Detect	1.4
Variance Detects	0.276	Percent Non-Detects	11.33%
Mean Detects	1.159	SD Detects	0.525
Median Detects	1	CV Detects	0.453
Skewness Detects	2.981	Kurtosis Detects	16.13
Mean of Logged Detects	0.0725	SD of Logged Detects	0.37
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.795	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.174	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0495	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.112	Standard Error of Mean	0.0273
SD	0.515	95% KM (BCA) UCL	1.157
95% KM (t) UCL	1.157	95% KM (Percentile Bootstrap) UCL	1.158
95% KM (z) UCL	1.157	95% KM Bootstrap t UCL	1.163
90% KM Chebyshev UCL	1.194	95% KM Chebyshev UCL	1.231
97.5% KM Chebyshev UCL	1.282	99% KM Chebyshev UCL	1.383
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.759	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.132	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0507	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.848	k star (bias corrected MLE)	6.786
Theta hat (MLE)	0.169	Theta star (bias corrected MLE)	0.171
nu hat (MLE)	4396	nu star (bias corrected)	4357
MLE Mean (bias corrected)	1.159	MLE Sd (bias corrected)	0.445
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	4.66	nu hat (KM)	3374
Approximate Chi Square Value (N/A, α)	3240	Adjusted Chi Square Value (N/A, β)	3240
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.158	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1.158
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.135	Mean	1.105
Maximum	5.4	Median	0.979
SD	0.522	CV	0.473
k hat (MLE)	5.949	k star (bias corrected MLE)	5.901
Theta hat (MLE)	0.186	Theta star (bias corrected MLE)	0.187
nu hat (MLE)	4307	nu star (bias corrected)	4273
MLE Mean (bias corrected)	1.105	MLE Sd (bias corrected)	0.455
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	4122	Adjusted Chi Square Value (N/A, β)	4121
95% Gamma Approximate UCL (use when $n \geq 50$)	1.145	95% Gamma Adjusted UCL (use when $n < 50$)	1.145
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.105	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0495	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.113	Mean in Log Scale	0.0289
SD in Original Scale	0.514	SD in Log Scale	0.378
95% t UCL (assumes normality of ROS data)	1.157	95% Percentile Bootstrap UCL	1.161
95% BCA Bootstrap UCL	1.16	95% Bootstrap t UCL	1.163
95% H-UCL (Log ROS)	1.144		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.083	Mean in Log Scale	-0.0207
SD in Original Scale	0.54	SD in Log Scale	0.447

95% t UCL (Assumes normality)

1.13

95% H-Stat UCL

1.128

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL

1.157

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters (mg/l)***particulate organic carbon (poc)***poc***mg/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	#####
Number of Detects	182	Number of Non-Detects	180
Number of Distinct Detects	134	Number of Distinct Non-Detects	3
Minimum Detect	1	Minimum Non-Detect	1
Maximum Detect	9.26	Maximum Non-Detect	1.3
Variance Detects	1.441	Percent Non-Detects	49.72%
Mean Detects	2.275	SD Detects	1.2
Median Detects	2.025	CV Detects	0.528
Skewness Detects	2.238	Kurtosis Detects	8.364
Mean of Logged Detects	0.713	SD of Logged Detects	0.453
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.827	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.144	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0657	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.641	Standard Error of Mean	0.0559
SD	1.062	95% KM (BCA) UCL	1.73
95% KM (t) UCL	1.734	95% KM (Percentile Bootstrap) UCL	1.731
95% KM (z) UCL	1.733	95% KM Bootstrap t UCL	1.744
90% KM Chebyshev UCL	1.809	95% KM Chebyshev UCL	1.885
97.5% KM Chebyshev UCL	1.991	99% KM Chebyshev UCL	2.198
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.606	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0784	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0685	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	4.758	k star (bias corrected MLE)	4.683
Theta hat (MLE)	0.478	Theta star (bias corrected MLE)	0.486
nu hat (MLE)	1732	nu star (bias corrected)	1705
MLE Mean (bias corrected)	2.275	MLE Sd (bias corrected)	1.051
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.39	nu hat (KM)	1731
Approximate Chi Square Value (N/A, α)	1635	Adjusted Chi Square Value (N/A, β)	1635
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.737	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1.738
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.255
Maximum	9.26	Median	1
SD	1.347	CV	1.073
k hat (MLE)	0.495	k star (bias corrected MLE)	0.493
Theta hat (MLE)	2.534	Theta star (bias corrected MLE)	2.546
nu hat (MLE)	358.6	nu star (bias corrected)	357
MLE Mean (bias corrected)	1.255	MLE Sd (bias corrected)	1.787
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (356.99, α)	314.2	Adjusted Chi Square Value (356.99, β)	314
95% Gamma Approximate UCL (use when $n \geq 50$)	1.426	95% Gamma Adjusted UCL (use when $n < 50$)	1.427
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0577	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0657	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.478	Mean in Log Scale	0.118
SD in Original Scale	1.183	SD in Log Scale	0.747
95% t UCL (assumes normality of ROS data)	1.58	95% Percentile Bootstrap UCL	1.576
95% BCA Bootstrap UCL	1.58	95% Bootstrap t UCL	1.584
95% H-UCL (Log ROS)	1.606		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	0.359	95% H-UCL (KM -Log)	1.68
KM SD (logged)	0.479	95% Critical H Value (KM-Log)	1.784
KM Standard Error of Mean (logged)	0.0253		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.393	Mean in Log Scale	0.0152
SD in Original Scale	1.229	SD in Log Scale	0.773
95% t UCL (Assumes normality)	1.5	95% H-Stat UCL	1.482
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	1.734	95% KM (% Bootstrap) UCL	1.731

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters (mg/l)***phosphorus***7723-14-0***mg/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	204
		Number of Missing Observations	0
Minimum	0.092	Mean	0.241
Maximum	1.24	Median	0.213
SD	0.119	Std. Error of Mean	0.00625
Coefficient of Variation	0.494	Skewness	3.591

Normal GOF Test			
Shapiro Wilk Test Statistic	0.75	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.143	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.251	95% Adjusted-CLT UCL (Chen-1995)	0.252
		95% Modified-t UCL (Johnson-1978)	0.251

Gamma GOF Test			
A-D Test Statistic	5.533	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.756	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.089	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0479	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	6.209	k star (bias corrected MLE)	6.16
Theta hat (MLE)	0.0388	Theta star (bias corrected MLE)	0.0391
nu hat (MLE)	4496	nu star (bias corrected)	4460
MLE Mean (bias corrected)	0.241	MLE Sd (bias corrected)	0.097
		Approximate Chi Square Value (0.05)	4306
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	4305

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.249	95% Adjusted Gamma UCL (use when n<50)	0.249

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.959	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.37E-08	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0702	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			

Lognormal Statistics		
Minimum of Logged Data	-2.386	Mean of logged Data -1.507
Maximum of Logged Data	0.215	SD of logged Data 0.384
Assuming Lognormal Distribution		
95% H-UCL	0.247	90% Chebyshev (MVUE) UCL 0.253
95% Chebyshev (MVUE) UCL	0.26	97.5% Chebyshev (MVUE) UCL 0.27
99% Chebyshev (MVUE) UCL	0.288	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	0.251	95% Jackknife UCL 0.251
95% Standard Bootstrap UCL	0.251	95% Bootstrap-t UCL 0.252
95% Hall's Bootstrap UCL	0.253	95% Percentile Bootstrap UCL 0.251
95% BCA Bootstrap UCL	0.253	
90% Chebyshev(Mean, Sd) UCL	0.259	95% Chebyshev(Mean, Sd) UCL 0.268
97.5% Chebyshev(Mean, Sd) UCL	0.28	99% Chebyshev(Mean, Sd) UCL 0.303
Suggested UCL to Use		
95% Student's-t UCL	0.251	or 95% Modified-t UCL 0.251
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (conventional parameters (mg/l)***sulfate***14808-79-8***mg/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 55
		Number of Missing Observations 0
Minimum	762	Mean 1792
Maximum	2600	Median 1800
SD	3.22E+02	Std. Error of Mean 16.9
Coefficient of Variation	0.179	Skewness -0.128
Normal GOF Test		
Shapiro Wilk Test Statistic	0.968	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	6.57E-05	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.105	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	1820	95% Adjusted-CLT UCL (Chen-1995) 1820
		95% Modified-t UCL (Johnson-1978) 1820
Gamma GOF Test		
A-D Test Statistic	3.694	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.112	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	29.49	k star (bias corrected MLE) 29.25
Theta hat (MLE)	60.78	Theta star (bias corrected MLE) 61.29
nu hat (MLE)	21350	nu star (bias corrected) 21174
MLE Mean (bias corrected)	1792	MLE Sd (bias corrected) 331.4
		Approximate Chi Square Value (0.05) 20837
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value 20835
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	1821	95% Adjusted Gamma UCL (use when n<50) 1822
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.954	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	1.31E-11	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.117	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	6.636	Mean of logged Data 7.474
Maximum of Logged Data	7.863	SD of logged Data 0.189

Assuming Lognormal Distribution			
95% H-UCL	1824	90% Chebyshev (MVUE) UCL	1847
95% Chebyshev (MVUE) UCL	1872	97.5% Chebyshev (MVUE) UCL	1906
99% Chebyshev (MVUE) UCL	1972		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1820	95% Jackknife UCL	1820
95% Standard Bootstrap UCL	1819	95% Bootstrap-t UCL	1820
95% Hall's Bootstrap UCL	1821	95% Percentile Bootstrap UCL	1820
95% BCA Bootstrap UCL	1820		
90% Chebyshev(Mean, Sd) UCL	1843	95% Chebyshev(Mean, Sd) UCL	1866
97.5% Chebyshev(Mean, Sd) UCL	1898	99% Chebyshev(Mean, Sd) UCL	1961
Suggested UCL to Use			
95% Student's-t UCL	1820	or 95% Modified-t UCL	1820
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE (conventional parameters (mg/l)***suspended sediment concentration - coarse fraction***sscc***mg/l****)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	#####
Number of Detects	338	Number of Non-Detects	24
Number of Distinct Detects	256	Number of Distinct Non-Detects	1
Minimum Detect	0	Minimum Non-Detect	0
Maximum Detect	166.4	Maximum Non-Detect	0
Variance Detects	109.3	Percent Non-Detects	6.63%
Mean Detects	4.466	SD Detects	10.46
Median Detects	2.242	CV Detects	2.341
Skewness Detects	11.67	Kurtosis Detects	172.6
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.341	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.335	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0482	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.17	Standard Error of Mean	0.534
SD	10.15	95% KM (BCA) UCL	5.296
95% KM (t) UCL	5.051	95% KM (Percentile Bootstrap) UCL	5.124
95% KM (z) UCL	5.049	95% KM Bootstrap t UCL	5.725
90% KM Chebyshev UCL	5.772	95% KM Chebyshev UCL	6.498
97.5% KM Chebyshev UCL	7.51E+00	99% KM Chebyshev UCL	9.49E+00
Gamma Statistics on Detected Data Only			
Dataset Contains Values <= 0 - Cannot Compute Gamma Statistics!			
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.169	nu hat (KM)	122.2
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (122.22, α)	97.69	Adjusted Chi Square Value (122.22, β)	97.61
95% Gamma Approximate KM-UCL (use when n>=50)	5.217	95% Gamma Adjusted KM-UCL (use when n<50)	5.222
DL/2 Statistics			
Mean in Original Scale	4.17	SD in Original Scale	10.16
95% t UCL (Assumes normality)	5.051		
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	7.506		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			

RESULT_VALUE (conventional parameters (mg/l)***suspended sediment concentration - fine fraction***sscf***mg/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	319
		Number of Missing Observations	0
Minimum	1.15	Mean	9.717
Maximum	174.9	Median	6.75
SD	12.39	Std. Error of Mean	0.651
Coefficient of Variation	1.275	Skewness	8.715
Normal GOF Test			
Shapiro Wilk Test Statistic	0.449	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.265	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	10.79	95% Adjusted-CLT UCL (Chen-1995)	11.11
		95% Modified-t UCL (Johnson-1978)	10.84
Gamma GOF Test			
A-D Test Statistic	11.87	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.766	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.133	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0484	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2	k star (bias corrected MLE)	1.985
Theta hat (MLE)	4.859	Theta star (bias corrected MLE)	4.895
nu hat (MLE)	1448	nu star (bias corrected)	1437
MLE Mean (bias corrected)	9.717	MLE Sd (bias corrected)	6.897
		Approximate Chi Square Value (0.05)	1350
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1350
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	10.34	95% Adjusted Gamma UCL (use when n<50)	10.35
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.59E-07	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0724	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	0.14	Mean of logged Data	2.003
Maximum of Logged Data	5.164	SD of logged Data	0.651
Assuming Lognormal Distribution			
95% H-UCL	9.771	90% Chebyshev (MVUE) UCL	10.19
95% Chebyshev (MVUE) UCL	10.65	97.5% Chebyshev (MVUE) UCL	11.3
99% Chebyshev (MVUE) UCL	12.58		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	10.79	95% Jackknife UCL	10.79
95% Standard Bootstrap UCL	10.79	95% Bootstrap-t UCL	11.49
95% Hall's Bootstrap UCL	15.81	95% Percentile Bootstrap UCL	10.84
95% BCA Bootstrap UCL	11.16		
90% Chebyshev(Mean, Sd) UCL	11.67	95% Chebyshev(Mean, Sd) UCL	12.56
97.5% Chebyshev(Mean, Sd) UCL	13.79	99% Chebyshev(Mean, Sd) UCL	16.2
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	12.56		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters (mg/l)***total organic carbon***toc***mg/l***t)

General Statistics			
Total Number of Observations	358	Number of Distinct Observations	#####

Number of Detects	308	Number of Non-Detects	50
Number of Distinct Detects	140	Number of Distinct Non-Detects	9
Minimum Detect	0.04	Minimum Non-Detect	0.5
Maximum Detect	23.3	Maximum Non-Detect	20
Variance Detects	7.382	Percent Non-Detects	13.97%
Mean Detects	2.872	SD Detects	2.717
Median Detects	2.36	CV Detects	0.946
Skewness Detects	2.67	Kurtosis Detects	12.84
Mean of Logged Detects	0.612	SD of Logged Detects	1.045
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.798	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.156	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0505	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.646	Standard Error of Mean	0.144
SD	2.666	95% KM (BCA) UCL	2.881
95% KM (t) UCL	2.884	95% KM (Percentile Bootstrap) UCL	2.889
95% KM (z) UCL	2.883	95% KM Bootstrap t UCL	2.908
90% KM Chebyshev UCL	3.078	95% KM Chebyshev UCL	3.275
97.5% KM Chebyshev UCL	3.547	99% KM Chebyshev UCL	4.081
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.934	Anderson-Darling GOF Test	
5% A-D Critical Value	0.778	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0686	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0528	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.268	k star (bias corrected MLE)	1.258
Theta hat (MLE)	2.265	Theta star (bias corrected MLE)	2.283
nu hat (MLE)	781.2	nu star (bias corrected)	774.9
MLE Mean (bias corrected)	2.872	MLE Sd (bias corrected)	2.561
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.985	nu hat (KM)	705
Approximate Chi Square Value (705.02, α)	644.4	Adjusted Chi Square Value (705.02, β)	644.2
95% Gamma Approximate KM-UCL (use when n>=50)	2.895	95% Gamma Adjusted KM-UCL (use when n<50)	2.896
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	2.616
Maximum	23.3	Median	2.2
SD	2.646	CV	1.011
k hat (MLE)	0.971	k star (bias corrected MLE)	0.965
Theta hat (MLE)	2.695	Theta star (bias corrected MLE)	2.713
nu hat (MLE)	695.1	nu star (bias corrected)	690.6
MLE Mean (bias corrected)	2.616	MLE Sd (bias corrected)	2.664
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (690.61, α)	630.6	Adjusted Chi Square Value (690.61, β)	630.4
95% Gamma Approximate UCL (use when n>=50)	2.865	95% Gamma Adjusted UCL (use when n<50)	2.866
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.129	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0505	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.623	Mean in Log Scale	0.483
SD in Original Scale	2.63	SD in Log Scale	1.071
95% t UCL (assumes normality of ROS data)	2.853	95% Percentile Bootstrap UCL	2.863
95% BCA Bootstrap UCL	2.875	95% Bootstrap t UCL	2.876
95% H-UCL (Log ROS)	3.254		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.885	Mean in Log Scale	0.523
SD in Original Scale	2.836	SD in Log Scale	1.163
95% t UCL (Assumes normality)	3.132	95% H-Stat UCL	3.813
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (Chebyshev) UCL		3.275	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (conventional parameters (mg/l)***total suspended solids***tss***mg/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	73
		Number of Missing Observations	0
Minimum	5.9	Mean	22.26
Maximum	110	Median	20
SD	12.11	Std. Error of Mean	0.637
Coefficient of Variation	0.544	Skewness	2.194
Normal GOF Test			
Shapiro Wilk Test Statistic	0.86	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.11	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	23.31	95% Adjusted-CLT UCL (Chen-1995)	23.38
		95% Modified-t UCL (Johnson-1978)	23.32
Gamma GOF Test			
A-D Test Statistic	2.23	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0778	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.048	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.882	k star (bias corrected MLE)	3.851
Theta hat (MLE)	5.734	Theta star (bias corrected MLE)	5.779
nu hat (MLE)	2810	nu star (bias corrected)	2788
MLE Mean (bias corrected)	22.26	MLE Sd (bias corrected)	11.34
		Approximate Chi Square Value (0.05)	2667
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2666
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	23.27	95% Adjusted Gamma UCL (use when n<50)	23.28
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.959	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.07E-08	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0952	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.775	Mean of logged Data	2.968
Maximum of Logged Data	4.7	SD of logged Data	0.528
Assuming Lognormal Distribution			
95% H-UCL	23.52	90% Chebyshev (MVUE) UCL	24.34
95% Chebyshev (MVUE) UCL	25.24	97.5% Chebyshev (MVUE) UCL	26.49
99% Chebyshev (MVUE) UCL	28.94		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	23.3	95% Jackknife UCL	23.31
95% Standard Bootstrap UCL	23.31	95% Bootstrap-t UCL	23.42
95% Hall's Bootstrap UCL	23.43	95% Percentile Bootstrap UCL	23.34
95% BCA Bootstrap UCL	23.42		
90% Chebyshev(Mean, Sd) UCL	24.17	95% Chebyshev(Mean, Sd) UCL	25.03
97.5% Chebyshev(Mean, Sd) UCL	26.23	99% Chebyshev(Mean, Sd) UCL	28.59
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	25.03		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters, dissolved (mg/l)***cyanide***57-12-5***mg/l***d)

General Statistics			
Total Number of Observations	2.70E+01	Number of Distinct Observations	500.00%
Number of Detects	7	Number of Non-Detects	20
Number of Distinct Detects	4	Number of Distinct Non-Detects	2
Minimum Detect	0.002	Minimum Non-Detect	0.005
Maximum Detect	0.008	Maximum Non-Detect	0.007
Variance Detects	4.24E-06	Percent Non-Detects	74.07%
Mean Detects	0.00471	SD Detects	0.00206
Median Detects	0.004	CV Detects	0.437
Skewness Detects	0.694	Kurtosis Detects	-0.225
Mean of Logged Detects	-5.442	SD of Logged Detects	0.453
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.85	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.35	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data Not Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00389	Standard Error of Mean	4.17E-04
SD	0.00129	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.0046	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.00457	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.00514	95% KM Chebyshev UCL	0.00571
97.5% KM Chebyshev UCL	0.00649	99% KM Chebyshev UCL	0.00804
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.635	Anderson-Darling GOF Test	
5% A-D Critical Value	0.71	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.316	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	3.13E-01	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.089	k star (bias corrected MLE)	3.575
Theta hat (MLE)	7.74E-04	Theta star (bias corrected MLE)	0.00132
nu hat (MLE)	85.25	nu star (bias corrected)	50.04
MLE Mean (bias corrected)	0.00471	MLE Sd (bias corrected)	0.00249
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	9.142	nu hat (KM)	493.7
Approximate Chi Square Value (493.66, α)	443.1	Adjusted Chi Square Value (493.66, β)	440.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.00433	95% Gamma Adjusted KM-UCL (use when n<50)	0.00436
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.002	Mean	0.00863
Maximum	0.01	Median	0.01
SD	0.00256	CV	0.297
k hat (MLE)	7.362	k star (bias corrected MLE)	6.569
Theta hat (MLE)	0.00117	Theta star (bias corrected MLE)	0.00131
nu hat (MLE)	397.6	nu star (bias corrected)	354.7
MLE Mean (bias corrected)	0.00863	MLE Sd (bias corrected)	0.00337
		Adjusted Level of Significance (β)	0.0401
Approximate Chi Square Value (354.73, α)	312.1	Adjusted Chi Square Value (354.73, β)	309.5
95% Gamma Approximate UCL (use when n>=50)	0.00981	95% Gamma Adjusted UCL (use when n<50)	0.00989
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.869	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.287	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00391	Mean in Log Scale	-5.601
SD in Original Scale	0.00142	SD in Log Scale	0.347
95% t UCL (assumes normality of ROS data)	0.00438	95% Percentile Bootstrap UCL	0.00436
95% BCA Bootstrap UCL	0.00444	95% Bootstrap t UCL	0.00446

95% H-UCL (Log ROS)	0.00445		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.603	95% H-UCL (KM -Log)	0.0044
KM SD (logged)	0.334	95% Critical H Value (KM-Log)	1.843
KM Standard Error of Mean (logged)	0.131		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00311	Mean in Log Scale	-583.60%
SD in Original Scale	0.0014	SD in Log Scale	0.329
95% t UCL (Assumes normality)	0.00357	95% H-Stat UCL	0.00347
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0046	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (conventional parameters, dissolved (mg/l)***nitrate + nitrite as nitrogen***no2no3***mg/l***d)			
General Statistics			
Total Number of Observations	361	Number of Distinct Observations	7800.00%
Number of Detects	323	Number of Non-Detects	38
Number of Distinct Detects	77	Number of Distinct Non-Detects	13
Minimum Detect	0.02	Minimum Non-Detect	0.1
Maximum Detect	2	Maximum Non-Detect	0.43
Variance Detects	0.04	Percent Non-Detects	10.53%
Mean Detects	0.409	SD Detects	0.2
Median Detects	0.42	CV Detects	0.488
Skewness Detects	1.687	Kurtosis Detects	12.41
Mean of Logged Detects	-1.054	SD of Logged Detects	0.671
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.914	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0864	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0493	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.375	Standard Error of Mean	0.0114
SD	0.215	95% KM (BCA) UCL	0.394
95% KM (t) UCL	0.394	95% KM (Percentile Bootstrap) UCL	0.394
95% KM (z) UCL	0.394	95% KM Bootstrap t UCL	0.395
90% KM Chebyshev UCL	0.409	95% KM Chebyshev UCL	0.425
97.5% KM Chebyshev UCL	0.446	99% KM Chebyshev UCL	0.488
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	9.426	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.134	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0508	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.272	k star (bias corrected MLE)	3.244
Theta hat (MLE)	0.125	Theta star (bias corrected MLE)	0.126
nu hat (MLE)	2114	nu star (bias corrected)	2096
MLE Mean (bias corrected)	0.409	MLE Sd (bias corrected)	0.227
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.051	nu hat (KM)	2203
Approximate Chi Square Value (N/A, α)	2095	Adjusted Chi Square Value (N/A, β)	2094
95% Gamma Approximate KM-UCL (use when n>=50)	0.394	95% Gamma Adjusted KM-UCL (use when n<50)	0.395
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.02	Mean	0.383
Maximum	2	Median	0.4

SD	0.204	CV	0.533
k hat (MLE)	2.942	k star (bias corrected MLE)	2.92
Theta hat (MLE)	0.13	Theta star (bias corrected MLE)	0.131
nu hat (MLE)	2124	nu star (bias corrected)	2108
MLE Mean (bias corrected)	0.383	MLE Sd (bias corrected)	0.224
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2002	Adjusted Chi Square Value (N/A, β)	2002
95% Gamma Approximate UCL (use when n>=50)	0.403	95% Gamma Adjusted UCL (use when n<50)	0.403
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.169	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0493	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.38	Mean in Log Scale	-1.163
SD in Original Scale	0.208	SD in Log Scale	0.716
95% t UCL (assumes normality of ROS data)	0.398	95% Percentile Bootstrap UCL	0.397
95% BCA Bootstrap UCL	0.397	95% Bootstrap t UCL	0.399
95% H-UCL (Log ROS)	0.434		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.375	Mean in Log Scale	-1.222
SD in Original Scale	0.215	SD in Log Scale	0.819
95% t UCL (Assumes normality)	0.393	95% H-Stat UCL	0.449
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.394		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (conventional parameters, dissolved (mg/l)***nitrogen (total kjeldahl) as nitrogen***kn***mg/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	8700.00%
Number of Detects	312	Number of Non-Detects	50
Number of Distinct Detects	83	Number of Distinct Non-Detects	37
Minimum Detect	0.2	Minimum Non-Detect	0.17
Maximum Detect	4.5	Maximum Non-Detect	1.1
Variance Detects	0.193	Percent Non-Detects	13.81%
Mean Detects	0.845	SD Detects	0.439
Median Detects	0.775	CV Detects	0.519
Skewness Detects	4.026	Kurtosis Detects	26.71
Mean of Logged Detects	-0.259	SD of Logged Detects	0.415
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.722	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.793	Standard Error of Mean	0.023
SD	0.434	95% KM (BCA) UCL	0.834
95% KM (t) UCL	0.831	95% KM (Percentile Bootstrap) UCL	0.832
95% KM (z) UCL	0.831	95% KM Bootstrap t UCL	0.838
90% KM Chebyshev UCL	0.862	95% KM Chebyshev UCL	0.893
97.5% KM Chebyshev UCL	0.937	99% KM Chebyshev UCL	1.022
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.385	Anderson-Darling GOF Test	
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.109	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0514	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.638	k star (bias corrected MLE)	5.586
Theta hat (MLE)	0.15	Theta star (bias corrected MLE)	0.151
nu hat (MLE)	3518	nu star (bias corrected)	3486
MLE Mean (bias corrected)	0.845	MLE Sd (bias corrected)	0.358

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.34	nu hat (KM)	2418
Approximate Chi Square Value (N/A, α)	2305	Adjusted Chi Square Value (N/A, β)	2304
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.832	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.832

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0358	Mean	0.787
Maximum	4.5	Median	0.74
SD	0.438	CV	0.556
k hat (MLE)	4.378	k star (bias corrected MLE)	4.344
Theta hat (MLE)	0.18	Theta star (bias corrected MLE)	0.181
nu hat (MLE)	3170	nu star (bias corrected)	3145
MLE Mean (bias corrected)	0.787	MLE Sd (bias corrected)	0.377
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3016	Adjusted Chi Square Value (N/A, β)	3015
95% Gamma Approximate UCL (use when $n \geq 50$)	0.82	95% Gamma Adjusted UCL (use when $n < 50$)	0.82

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.0834 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0502 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.795	Mean in Log Scale	-0.329
SD in Original Scale	0.429	SD in Log Scale	0.435
95% t UCL (assumes normality of ROS data)	0.832	95% Percentile Bootstrap UCL	0.834
95% BCA Bootstrap UCL	0.837	95% Bootstrap t UCL	0.839
95% H-UCL (Log ROS)	0.823		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.775	Mean in Log Scale	-0.385
SD in Original Scale	0.446	SD in Log Scale	0.519
95% t UCL (Assumes normality)	0.813	95% H-Stat UCL	0.818
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.834		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters, dissolved (mg/l)***phosphorus***7723-14-0***mg/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	190
		Number of Missing Observations	0
Minimum	0.015	Mean	0.159
Maximum	0.981	Median	0.141
SD	0.106	Std. Error of Mean	0.00555
Coefficient of Variation	0.664	Skewness	3.516

Normal GOF Test	
Shapiro Wilk Test Statistic	0.74 Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.171 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466 Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level	

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.168	95% Adjusted-CLT UCL (Chen-1995)	0.169
		95% Modified-t UCL (Johnson-1978)	0.168

Gamma GOF Test			
A-D Test Statistic	5.243	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0918	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0481	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics		
k hat (MLE)	3.184	k star (bias corrected MLE) 3.159
Theta hat (MLE)	0.05	Theta star (bias corrected MLE) 0.0504
nu hat (MLE)	2305	nu star (bias corrected) 2287
MLE Mean (bias corrected)	0.159	MLE Sd (bias corrected) 0.0895
		Approximate Chi Square Value (0.05) 2177
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value 2177

Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	0.167	95% Adjusted Gamma UCL (use when n<50) 0.167

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.938	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0835	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		

Lognormal Statistics		
Minimum of Logged Data	-4.2	Mean of logged Data -2.004
Maximum of Logged Data	-0.0192	SD of logged Data 0.593

Assuming Lognormal Distribution		
95% H-UCL	0.17	90% Chebyshev (MVUE) UCL 0.177
95% Chebyshev (MVUE) UCL	0.184	97.5% Chebyshev (MVUE) UCL 0.194
99% Chebyshev (MVUE) UCL	0.215	

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs		
95% CLT UCL	0.168	95% Jackknife UCL 0.168
95% Standard Bootstrap UCL	0.168	95% Bootstrap-t UCL 0.169
95% Hall's Bootstrap UCL	0.17	95% Percentile Bootstrap UCL 0.168
95% BCA Bootstrap UCL	0.17	
90% Chebyshev(Mean, Sd) UCL	0.176	95% Chebyshev(Mean, Sd) UCL 0.183
97.5% Chebyshev(Mean, Sd) UCL	0.194	99% Chebyshev(Mean, Sd) UCL 0.214

Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	0.183	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (conventional parameters, dissolved (mg/l)***total dissolved solids***tds***mg/l***d)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 15
		Number of Missing Observations 0
Minimum	8500	Mean 22427
Maximum	26000	Median 23000
SD	2293	Std. Error of Mean 120.5
Coefficient of Variation	0.102	Skewness -1.918

Normal GOF Test		
Shapiro Wilk Test Statistic	0.846	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.191	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	22626	95% Adjusted-CLT UCL (Chen-1995) 22612
		95% Modified-t UCL (Johnson-1978) 22624

Gamma GOF Test		
A-D Test Statistic	17.88	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.212	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics		
k hat (MLE)	79.46	k star (bias corrected MLE) 78.81

Theta hat (MLE)	282.2	Theta star (bias corrected MLE)	284.6
nu hat (MLE)	57533	nu star (bias corrected)	57057
MLE Mean (bias corrected)	22427	MLE Sd (bias corrected)	2526
		Approximate Chi Square Value (0.05)	56503
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	56500
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	22647	95% Adjusted Gamma UCL (use when n<50)	22648
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.763	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.222	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	9.048	Mean of logged Data	10.01
Maximum of Logged Data	10.17	SD of logged Data	0.119
Assuming Lognormal Distribution			
95% H-UCL	22678	90% Chebyshev (MVUE) UCL	22865
95% Chebyshev (MVUE) UCL	23056	97.5% Chebyshev (MVUE) UCL	23322
99% Chebyshev (MVUE) UCL	23843		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	22625	95% Jackknife UCL	22626
95% Standard Bootstrap UCL	22624	95% Bootstrap-t UCL	22618
95% Hall's Bootstrap UCL	22619	95% Percentile Bootstrap UCL	22613
95% BCA Bootstrap UCL	22599		
90% Chebyshev(Mean, Sd) UCL	22788	95% Chebyshev(Mean, Sd) UCL	22952
97.5% Chebyshev(Mean, Sd) UCL	23179	99% Chebyshev(Mean, Sd) UCL	23626
Suggested UCL to Use			
95% Student's-t UCL	22626	or 95% Modified-t UCL	22624
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE (dioxin furans (ng/l)***total dioxin/furan teq 1998 (avian) (km) (rl)***tdioxfurb_km_rl***ng/l***t)			
General Statistics			
Total Number of Observations	1.23E+02	Number of Distinct Observations	#####
Number of Detects	4.80E+01	Number of Non-Detects	75
Number of Distinct Detects	4.80E+01	Number of Distinct Non-Detects	73
Minimum Detect	5.85E-04	Minimum Non-Detect	4.08E-04
Maximum Detect	0.00883	Maximum Non-Detect	0.00723
Variance Detects	1.64E-06	Percent Non-Detects	60.98%
Mean Detects	0.00192	SD Detects	0.00128
Median Detects	0.00145	CV Detects	0.669
Skewness Detects	3.603	Kurtosis Detects	17.77
Mean of Logged Detects	-6.39	SD of Logged Detects	0.481
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.676	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	1.83E-01	Lilliefors GOF Test	
5% Lilliefors Critical Value	1.28E-01	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.14E-03	Standard Error of Mean	1.02E-04
SD	0.00106	95% KM (BCA) UCL	0.00133
95% KM (t) UCL	0.00131	95% KM (Percentile Bootstrap) UCL	0.00133
95% KM (z) UCL	0.00131	95% KM Bootstrap t UCL	0.00134
90% KM Chebyshev UCL	0.00145	95% KM Chebyshev UCL	0.00159
97.5% KM Chebyshev UCL	0.00178	99% KM Chebyshev UCL	0.00216
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.473	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.168	Kolmogrov-Smirnoff GOF	

5% K-S Critical Value	0.128	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.937	k star (bias corrected MLE) 3.704
Theta hat (MLE)	4.87E-04	Theta star (bias corrected MLE) 5.17E-04
nu hat (MLE)	377.9	nu star (bias corrected) 355.6
MLE Mean (bias corrected)	1.92E-03	MLE Sd (bias corrected) 9.96E-04
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.174	nu hat (KM) 288.8
Approximate Chi Square Value (288.81, α)	250.4	Adjusted Chi Square Value (288.81, β) 250
95% Gamma Approximate KM-UCL (use when n>=50)	0.00132	95% Gamma Adjusted KM-UCL (use when n<50) 0.00132
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	5.85E-04	Mean 0.00685
Maximum	0.01	Median 0.01
SD	0.00404	CV 0.59
k hat (MLE)	1.723	k star (bias corrected MLE) 1.686
Theta hat (MLE)	0.00397	Theta star (bias corrected MLE) 0.00406
nu hat (MLE)	423.9	nu star (bias corrected) 414.9
MLE Mean (bias corrected)	0.00685	MLE Sd (bias corrected) 0.00527
		Adjusted Level of Significance (β) 0.048
Approximate Chi Square Value (414.87, α)	368.7	Adjusted Chi Square Value (414.87, β) 368.1
95% Gamma Approximate UCL (use when n>=50)	0.0077	95% Gamma Adjusted UCL (use when n<50) 0.00771
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.947	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.143	Lilliefors GOF Test
5% Lilliefors Critical Value	1.28E-01	Detected Data Not Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.15E-03	Mean in Log Scale -6.974
SD in Original Scale	0.00101	SD in Log Scale 0.578
95% t UCL (assumes normality of ROS data)	0.0013	95% Percentile Bootstrap UCL 0.00131
95% BCA Bootstrap UCL	0.00134	95% Bootstrap t UCL 0.00135
95% H-UCL (Log ROS)	1.22E-03	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-7.054	95% H-UCL (KM -Log) 0.00127
KM SD (logged)	0.718	95% Critical H Value (KM-Log) 1.96
KM Standard Error of Mean (logged)	0.0795	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	1.22E-03	Mean in Log Scale -6.967
SD in Original Scale	0.00106	SD in Log Scale 0.698
95% t UCL (Assumes normality)	0.00137	95% H-Stat UCL 0.00136
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.00131	95% KM (% Bootstrap) UCL 0.00133
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (dioxin furans (ng/l)***total dioxin/furan teq 1998 (fish) (km) (rl)***tdioxfurf_km_rl***ng/l***t)		
General Statistics		
Total Number of Observations	123	Number of Distinct Observations 120
Number of Detects	48	Number of Non-Detects 75
Number of Distinct Detects	48	Number of Distinct Non-Detects 72
Minimum Detect	4.72E-04	Minimum Non-Detect 2.04E-04
Maximum Detect	0.00825	Maximum Non-Detect 0.00549
Variance Detects	1.40E-06	Percent Non-Detects 60.98%
Mean Detects	0.0016	SD Detects 0.00118
Median Detects	0.0012	CV Detects 0.739
Skewness Detects	4.018	Kurtosis Detects 21.36
Mean of Logged Detects	-6.588	SD of Logged Detects 0.507

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	6.37E-01	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	9.47E-01	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	1.94E-01	Lilliefors GOF Test
5% Lilliefors Critical Value	1.28E-01	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	9.88E-04	Standard Error of Mean 9.55E-05
SD	9.41E-04	95% KM (BCA) UCL 0.00117
95% KM (t) UCL	0.00115	95% KM (Percentile Bootstrap) UCL 0.00116
95% KM (z) UCL	0.00115	95% KM Bootstrap t UCL 0.00117
90% KM Chebyshev UCL	0.00127	95% KM Chebyshev UCL 0.0014
97.5% KM Chebyshev UCL	0.00158	99% KM Chebyshev UCL 0.00194
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.355	Anderson-Darling GOF Test
5% A-D Critical Value	7.55E-01	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.154	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.129	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.498	k star (bias corrected MLE) 3.293
Theta hat (MLE)	4.57E-04	Theta star (bias corrected MLE) 4.86E-04
nu hat (MLE)	335.8	nu star (bias corrected) 316.1
MLE Mean (bias corrected)	0.0016	MLE Sd (bias corrected) 8.81E-04
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.104	nu hat (KM) 271.6
Approximate Chi Square Value (271.57, α)	2.34E+02	Adjusted Chi Square Value (271.57, β) 234
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00114	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.00115
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	4.72E-04	Mean 0.00672
Maximum	0.01	Median 0.01
SD	0.00418	CV 0.622
k hat (MLE)	1.473	k star (bias corrected MLE) 1.442
Theta hat (MLE)	0.00456	Theta star (bias corrected MLE) 0.00466
nu hat (MLE)	362.3	nu star (bias corrected) 354.8
MLE Mean (bias corrected)	0.00672	MLE Sd (bias corrected) 0.0056
		Adjusted Level of Significance (β) 0.048
Approximate Chi Square Value (354.76, α)	312.1	Adjusted Chi Square Value (354.76, β) 311.6
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00764	95% Gamma Adjusted UCL (use when $n < 50$) 0.00765
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	9.54E-01	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	9.47E-01	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	1.25E-01	Lilliefors GOF Test
5% Lilliefors Critical Value	1.28E-01	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	9.99E-04	Mean in Log Scale -7.095
SD in Original Scale	8.84E-04	SD in Log Scale 0.546
95% t UCL (assumes normality of ROS data)	1.13E-03	95% Percentile Bootstrap UCL 0.00114
95% BCA Bootstrap UCL	0.00118	95% Bootstrap t UCL 0.00119
95% H-UCL (Log ROS)	0.00105	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-7.259	95% H-UCL (KM -Log) 0.00118
KM SD (logged)	0.85	95% Critical H Value (KM-Log) 2.06
KM Standard Error of Mean (logged)	1.19E-01	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00107	Mean in Log Scale -7.08
SD in Original Scale	9.23E-04	SD in Log Scale 0.686
95% t UCL (Assumes normality)	0.00121	95% H-Stat UCL 0.0012
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		

95% KM (t) UCL	1.15E-03	95% KM (% Bootstrap) UCL	1.16E-03
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (dioxin furans (ng/l)***total dioxin/furan teq 2005 (mammal) (km) (rl)***tdioxfurm_km_ri***ng/l***t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	120
Number of Detects	48	Number of Non-Detects	75
Number of Distinct Detects	48	Number of Distinct Non-Detects	72
Minimum Detect	4.44E-04	Minimum Non-Detect	1.86E-04
Maximum Detect	0.00737	Maximum Non-Detect	0.00599
Variance Detects	1.11E-06	Percent Non-Detects	60.98%
Mean Detects	1.45E-03	SD Detects	1.05E-03
Median Detects	1.10E-03	CV Detects	7.29E-01
Skewness Detects	4.02E+00	Kurtosis Detects	2.14E+01
Mean of Logged Detects	-6.69E+00	SD of Logged Detects	0.5
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.637	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.199	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.128	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.69E-04	Standard Error of Mean	8.46E-05
SD	8.19E-04	95% KM (BCA) UCL	0.00111
95% KM (t) UCL	0.00111	95% KM (Percentile Bootstrap) UCL	0.00112
95% KM (z) UCL	1.11E-03	95% KM Bootstrap t UCL	1.13E-03
90% KM Chebyshev UCL	0.00122	95% KM Chebyshev UCL	0.00134
97.5% KM Chebyshev UCL	1.50E-03	99% KM Chebyshev UCL	1.81E-03
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.399	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	1.64E-01	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.129	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.588	k star (bias corrected MLE)	3.378
Theta hat (MLE)	4.03E-04	Theta star (bias corrected MLE)	4.28E-04
nu hat (MLE)	344.5	nu star (bias corrected)	324.3
MLE Mean (bias corrected)	1.45E-03	MLE Sd (bias corrected)	7.86E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.398	nu hat (KM)	343.9
Approximate Chi Square Value (343.86, α)	301.9	Adjusted Chi Square Value (343.86, β)	301.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.0011	95% Gamma Adjusted KM-UCL (use when n<50)	0.0011
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	4.44E-04	Mean	0.00666
Maximum	0.01	Median	0.01
SD	0.00424	CV	0.637
k hat (MLE)	1.376	k star (bias corrected MLE)	1.348
Theta hat (MLE)	0.00484	Theta star (bias corrected MLE)	0.00494
nu hat (MLE)	338.4	nu star (bias corrected)	331.5
MLE Mean (bias corrected)	0.00666	MLE Sd (bias corrected)	0.00574
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (331.52, α)	2.90E+02	Adjusted Chi Square Value (331.52, β)	289.9
95% Gamma Approximate UCL (use when n>=50)	7.61E-03	95% Gamma Adjusted UCL (use when n<50)	7.62E-03
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.947	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.138	Lilliefors GOF Test	
5% Lilliefors Critical Value	1.28E-01	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	9.73E-04	Mean in Log Scale	-7.078
SD in Original Scale	7.63E-04	SD in Log Scale	0.476

95% t UCL (assumes normality of ROS data)	0.00109	95% Percentile Bootstrap UCL	0.00109
95% BCA Bootstrap UCL	0.00113	95% Bootstrap t UCL	0.00115
95% H-UCL (Log ROS)	0.00102		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.214	95% H-UCL (KM -Log)	0.00115
KM SD (logged)	0.78	95% Critical H Value (KM-Log)	2.005
KM Standard Error of Mean (logged)	0.11		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00102	Mean in Log Scale	-7.093
SD in Original Scale	8.24E-04	SD in Log Scale	0.646
95% t UCL (Assumes normality)	0.00115	95% H-Stat UCL	0.00114
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00111	95% KM (% Bootstrap) UCL	0.00112
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (dioxin furans (ng/l)***total heptachlorodibenzofuran (hpcdf)***38998-75-3***ng/l***t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	115
Number of Detects	51	Number of Non-Detects	72
Number of Distinct Detects	50	Number of Distinct Non-Detects	6.90E+01
Minimum Detect	6.33E-04	Minimum Non-Detect	6.03E-04
Maximum Detect	0.0866	Maximum Non-Detect	0.0184
Variance Detects	1.45E-04	Percent Non-Detects	58.54%
Mean Detects	0.00471	SD Detects	0.012
Median Detects	0.00227	CV Detects	2.554
Skewness Detects	6.565	Kurtosis Detects	45.13
Mean of Logged Detects	-6	SD of Logged Detects	0.888
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.291	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.367	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.124	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00256	Standard Error of Mean	7.22E-04
SD	0.0079	95% KM (BCA) UCL	0.00405
95% KM (t) UCL	0.00376	95% KM (Percentile Bootstrap) UCL	0.00397
95% KM (z) UCL	0.00375	95% KM Bootstrap t UCL	0.00685
90% KM Chebyshev UCL	0.00472	95% KM Chebyshev UCL	0.00571
97.5% KM Chebyshev UCL	0.00707	99% KM Chebyshev UCL	0.00974
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.029	Anderson-Darling GOF Test	
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.209	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.128	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.908	k star (bias corrected MLE)	0.868
Theta hat (MLE)	0.00519	Theta star (bias corrected MLE)	0.00543
nu hat (MLE)	92.66	nu star (bias corrected)	88.54
MLE Mean (bias corrected)	0.00471	MLE Sd (bias corrected)	0.00506
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.105	nu hat (KM)	25.78
Approximate Chi Square Value (25.78, α)	15.21	Adjusted Chi Square Value (25.78, β)	15.11
95% Gamma Approximate KM-UCL (use when n>=50)	0.00434	95% Gamma Adjusted KM-UCL (use when n<50)	0.00436
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	6.33E-04	Mean	0.00781

Maximum	0.0866	Median	0.01
SD	0.00814	CV	1.042
k hat (MLE)	1.658	k star (bias corrected MLE)	1.623
Theta hat (MLE)	0.00471	Theta star (bias corrected MLE)	0.00481
nu hat (MLE)	407.8	nu star (bias corrected)	399.2
MLE Mean (bias corrected)	0.00781	MLE Sd (bias corrected)	0.00613
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (399.20, α)	353.9	Adjusted Chi Square Value (399.20, β)	353.4
95% Gamma Approximate UCL (use when n>=50)	0.00881	95% Gamma Adjusted UCL (use when n<50)	0.00882
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0907	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.124	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00238	Mean in Log Scale	-6.752
SD in Original Scale	0.00796	SD in Log Scale	0.9
95% t UCL (assumes normality of ROS data)	0.00357	95% Percentile Bootstrap UCL	0.00366
95% BCA Bootstrap UCL	0.00469	95% Bootstrap t UCL	0.00681
95% H-UCL (Log ROS)	0.00208		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-6.592	95% H-UCL (KM -Log)	0.00227
KM SD (logged)	0.836	95% Critical H Value (KM-Log)	2.049
KM Standard Error of Mean (logged)	0.0863		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00276	Mean in Log Scale	-6.49
SD in Original Scale	0.00794	SD in Log Scale	0.873
95% t UCL (Assumes normality)	0.00395	95% H-Stat UCL	0.00262
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00376	95% KM (% Bootstrap) UCL	0.00397
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (dioxin furans (ng/l)***total heptachlorodibenzo-p-dioxin (hpcdd)***37871-00-4***ng/l***t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	115
Number of Detects	56	Number of Non-Detects	67
Number of Distinct Detects	54	Number of Distinct Non-Detects	65
Minimum Detect	0.00143	Minimum Non-Detect	9.09E-04
Maximum Detect	0.0635	Maximum Non-Detect	0.0282
Variance Detects	7.18E-05	Percent Non-Detects	54.47%
Mean Detects	0.0069	SD Detects	0.00847
Median Detects	0.00538	CV Detects	1.229
Skewness Detects	5.695	Kurtosis Detects	37.39
Mean of Logged Detects	-5.242	SD of Logged Detects	0.636
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.455	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.285	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00423	Standard Error of Mean	5.83E-04
SD	0.00627	95% KM (BCA) UCL	0.00549
95% KM (t) UCL	0.0052	95% KM (Percentile Bootstrap) UCL	0.00528
95% KM (z) UCL	0.00519	95% KM Bootstrap t UCL	0.59%
90% KM Chebyshev UCL	0.00598	95% KM Chebyshev UCL	0.00677
97.5% KM Chebyshev UCL	0.00787	99% KM Chebyshev UCL	0.01
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.435	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.191	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.12	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	2.037	k star (bias corrected MLE) 1.939
Theta hat (MLE)	0.00339	Theta star (bias corrected MLE) 0.00356
nu hat (MLE)	228.1	nu star (bias corrected) 217.2
MLE Mean (bias corrected)	0.0069	MLE Sd (bias corrected) 0.00495
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.455	nu hat (KM) 112
Approximate Chi Square Value (111.96, α)	88.54	Adjusted Chi Square Value (111.96, β) 88.29
95% Gamma Approximate KM-UCL (use when n>=50)	0.00535	95% Gamma Adjusted KM-UCL (use when n<50) 0.00537
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00143	Mean 0.00859
Maximum	0.0635	Median 0.01
SD	0.0059	CV 0.687
k hat (MLE)	3.793	k star (bias corrected MLE) 3.706
Theta hat (MLE)	0.00226	Theta star (bias corrected MLE) 0.00232
nu hat (MLE)	933.1	nu star (bias corrected) 911.6
MLE Mean (bias corrected)	0.00859	MLE Sd (bias corrected) 0.00446
		Adjusted Level of Significance (β) 0.048
Approximate Chi Square Value (911.63, α)	842.6	Adjusted Chi Square Value (911.63, β) 841.8
95% Gamma Approximate UCL (use when n>=50)	0.00929	95% Gamma Adjusted UCL (use when n<50) 0.0093
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.123	Lilliefors GOF Test
5% Lilliefors Critical Value	0.118	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00414	Mean in Log Scale -5.842
SD in Original Scale	0.00624	SD in Log Scale 0.731
95% t UCL (assumes normality of ROS data)	0.00507	95% Percentile Bootstrap UCL 0.00513
95% BCA Bootstrap UCL	0.00562	95% Bootstrap t UCL 0.00591
95% H-UCL (Log ROS)	0.00432	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00459	Mean in Log Scale -5.762
SD in Original Scale	0.00636	SD in Log Scale 0.816
95% t UCL (Assumes normality)	0.00554	95% H-Stat UCL 0.00509
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.0052	95% KM (% Bootstrap) UCL 0.00528
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (dioxin furans (ng/l)***total hexachlorodibenzofuran (hxcdf)***55684-94-1***ng/l***t)		
General Statistics		
Total Number of Observations	123	Number of Distinct Observations 119
Number of Detects	30	Number of Non-Detects 93
Number of Distinct Detects	29	Number of Distinct Non-Detects 91
Minimum Detect	4.44E-04	Minimum Non-Detect 3.55E-04
Maximum Detect	0.0801	Maximum Non-Detect 0.0173
Variance Detects	2.13E-04	Percent Non-Detects 75.61%
Mean Detects	0.00576	SD Detects 0.0146
Median Detects	0.00126	CV Detects 2.53
Skewness Detects	4.891	Kurtosis Detects 25.35
Mean of Logged Detects	-6.213	SD of Logged Detects 1.253
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.371	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.927	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.358	Lilliefors GOF Test
5% Lilliefors Critical Value	0.162	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		

Mean	0.00177	Standard Error of Mean	6.83E-04
SD	0.00744	95% KM (BCA) UCL	0.00321
95% KM (t) UCL	0.00291	95% KM (Percentile Bootstrap) UCL	0.0031
95% KM (z) UCL	0.0029	95% KM Bootstrap t UCL	0.00542
90% KM Chebyshev UCL	0.00382	95% KM Chebyshev UCL	0.00475
97.5% KM Chebyshev UCL	0.00604	99% KM Chebyshev UCL	0.00857

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.6	Anderson-Darling GOF Test	
5% A-D Critical Value	0.802	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.236	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.168	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	5.87E-01	k star (bias corrected MLE)	0.55
Theta hat (MLE)	0.00982	Theta star (bias corrected MLE)	0.0105
nu hat (MLE)	35.19	nu star (bias corrected)	33.01
MLE Mean (bias corrected)	0.00576	MLE Sd (bias corrected)	0.00777

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0568	nu hat (KM)	13.97
Approximate Chi Square Value (13.97, α)	6.549	Adjusted Chi Square Value (13.97, β)	6.489
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00378	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00382
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	4.44E-04	Mean	0.00897
Maximum	0.0801	Median	0.01
SD	0.00734	CV	0.819
k hat (MLE)	1.916	k star (bias corrected MLE)	1.874
Theta hat (MLE)	0.00468	Theta star (bias corrected MLE)	0.00478
nu hat (MLE)	471.2	nu star (bias corrected)	461.1
MLE Mean (bias corrected)	0.00897	MLE Sd (bias corrected)	0.00655
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (461.09, α)	412.3	Adjusted Chi Square Value (461.09, β)	411.8
95% Gamma Approximate UCL (use when $n \geq 50$)	0.01	95% Gamma Adjusted UCL (use when $n < 50$)	0.01

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.891	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.927	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.195	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.162	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00151	Mean in Log Scale	-8.299
SD in Original Scale	0.00751	SD in Log Scale	1.38
95% t UCL (assumes normality of ROS data)	0.00263	95% Percentile Bootstrap UCL	0.00276
95% BCA Bootstrap UCL	0.00351	95% Bootstrap t UCL	0.00549
95% H-UCL (Log ROS)	8.88E-04		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00202	Mean in Log Scale	-7.14
SD in Original Scale	0.00747	SD in Log Scale	1.028
95% t UCL (Assumes normality)	0.00314	95% H-Stat UCL	0.00165
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	0.00321
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (dioxin furans (ng/l)***total hexachlorodibenzo-p-dioxin (hxcdd)***34465-46-8***ng/l***t)

General Statistics

Total Number of Observations	123	Number of Distinct Observations	114
Number of Detects	14	Number of Non-Detects	109
Number of Distinct Detects	14	Number of Distinct Non-Detects	101

Minimum Detect	8.50E-04	Minimum Non-Detect	3.59E-04
Maximum Detect	0.015	Maximum Non-Detect	0.026
Variance Detects	2.45E-05	Percent Non-Detects	88.62%
Mean Detects	3.76E-03	SD Detects	0.00495
Median Detects	0.00116	CV Detects	1.318
Skewness Detects	1.771	Kurtosis Detects	1.884
Mean of Logged Detects	-6.21	SD of Logged Detects	1.064
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.64	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.334	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	8.19E-04	Standard Error of Mean	1.87E-04
SD	0.00195	95% KM (BCA) UCL	0.0012
95% KM (t) UCL	0.00113	95% KM (Percentile Bootstrap) UCL	0.00116
95% KM (z) UCL	0.00113	95% KM Bootstrap t UCL	0.00141
90% KM Chebyshev UCL	0.00138	95% KM Chebyshev UCL	0.00163
97.5% KM Chebyshev UCL	0.00198	99% KM Chebyshev UCL	0.00267
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.741	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.337	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.236	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.93	k star (bias corrected MLE)	0.778
Theta hat (MLE)	0.00404	Theta star (bias corrected MLE)	0.48%
nu hat (MLE)	26.04	nu star (bias corrected)	21.8
MLE Mean (bias corrected)	0.00376	MLE Sd (bias corrected)	0.00426
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.176	nu hat (KM)	43.21
Approximate Chi Square Value (43.21, α)	29.14	Adjusted Chi Square Value (43.21, β)	29
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00121	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00122
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	8.50E-04	Mean	0.00929
Maximum	0.015	Median	0.01
SD	0.00256	CV	0.276
k hat (MLE)	4.75E+00	k star (bias corrected MLE)	4.639
Theta hat (MLE)	0.00196	Theta star (bias corrected MLE)	0.002
nu hat (MLE)	1.17E+03	nu star (bias corrected)	1.14E+03
MLE Mean (bias corrected)	9.29E-03	MLE Sd (bias corrected)	0.00431
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (N/A, α)	1064	Adjusted Chi Square Value (N/A, β)	1063
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00997	95% Gamma Adjusted UCL (use when $n < 50$)	0.00997
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.769	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.304	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	5.07E-04	Mean in Log Scale	-9.026
SD in Original Scale	0.002	SD in Log Scale	1.122
95% t UCL (assumes normality of ROS data)	8.05E-04	95% Percentile Bootstrap UCL	8.10E-04
95% BCA Bootstrap UCL	9.39E-04	95% Bootstrap t UCL	0.0013
95% H-UCL (Log ROS)	2.85E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00134	Mean in Log Scale	-7.178
SD in Original Scale	0.00246	SD in Log Scale	0.877
95% t UCL (Assumes normality)	0.00171	95% H-Stat UCL	0.00132
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (BCA) UCL	0.0012	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (dioxin furans (ng/l)***total pentachlorodibenzofuran (pecdf)***30402-15-4***ng/l***t)		
General Statistics		
Total Number of Observations	123	Number of Distinct Observations 117
Number of Detects	9	Number of Non-Detects 114
Number of Distinct Detects	9	Number of Distinct Non-Detects 108
Minimum Detect	2.29E-03	Minimum Non-Detect 1.74E-04
Maximum Detect	0.0591	Maximum Non-Detect 0.00524
Variance Detects	3.28E-04	Percent Non-Detects 92.68%
Mean Detects	0.0116	SD Detects 0.0181
Median Detects	0.00545	CV Detects 1.554
Skewness Detects	2.815	Kurtosis Detects 8.143
Mean of Logged Detects	-5.05	SD of Logged Detects 1.011
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.551	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.368	Lilliefors GOF Test
5% Lilliefors Critical Value	0.295	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00102	Standard Error of Mean 5.26E-04
SD	0.0055	95% KM (BCA) UCL 0.00204
95% KM (t) UCL	0.00189	95% KM (Percentile Bootstrap) UCL 0.00198
95% KM (z) UCL	0.00188	95% KM Bootstrap t UCL 0.00382
90% KM Chebyshev UCL	0.00259	95% KM Chebyshev UCL 0.00331
97.5% KM Chebyshev UCL	0.0043	99% KM Chebyshev UCL 0.00625
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.892	Anderson-Darling GOF Test
5% A-D Critical Value	0.744	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.255	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.287	Detected data appear Gamma Distributed at 5% Significance Level
Detected data follow Appr. Gamma Distribution at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.97	k star (bias corrected MLE) 0.721
Theta hat (MLE)	0.012	Theta star (bias corrected MLE) 0.0162
nu hat (MLE)	17.46	nu star (bias corrected) 12.97
MLE Mean (bias corrected)	0.0116	MLE Sd (bias corrected) 0.0137
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0341	nu hat (KM) 839.30%
Approximate Chi Square Value (8.39, α)	2.965	Adjusted Chi Square Value (8.39, β) 2.927
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00288	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.00291
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00229	Mean 0.0101
Maximum	0.0591	Median 0.01
SD	0.00466	CV 0.46
k hat (MLE)	1.14E+01	k star (bias corrected MLE) 11.12
Theta hat (MLE)	8.88E-04	Theta star (bias corrected MLE) 9.10E-04
nu hat (MLE)	2803	nu star (bias corrected) 2736
MLE Mean (bias corrected)	0.0101	MLE Sd (bias corrected) 0.00303
		Adjusted Level of Significance (β) 0.048
Approximate Chi Square Value (N/A, α)	2615	Adjusted Chi Square Value (N/A, β) 2614
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0106	95% Gamma Adjusted UCL (use when $n < 50$) 0.0106
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.882	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.188	Lilliefors GOF Test
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	8.71E-04	Mean in Log Scale	-10.47
SD in Original Scale	0.00554	SD in Log Scale	1.596
95% t UCL (assumes normality of ROS data)	0.0017	95% Percentile Bootstrap UCL	0.00179
95% BCA Bootstrap UCL	0.00248	95% Bootstrap t UCL	0.0041
95% H-UCL (Log ROS)	1.51E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.39	95% H-UCL (KM -Log)	4.43E-04
KM SD (logged)	0.977	95% Critical H Value (KM-Log)	2.167
KM Standard Error of Mean (logged)	0.0937		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00128	Mean in Log Scale	-7.668
SD in Original Scale	0.00549	SD in Log Scale	0.971
95% t UCL (Assumes normality)	0.0021	95% H-Stat UCL	9.06E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.89E-03	95% GROS Approximate Gamma UCL	1.06%
95% Approximate Gamma KM-UCL	0.00288		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (dioxin furans (ng/l)***total tetrachlorodibenzofuran (tcdf)***30402-14-3***ng/l***t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	113
Number of Detects	9	Number of Non-Detects	114
Number of Distinct Detects	9	Number of Distinct Non-Detects	105
Minimum Detect	1.31E-03	Minimum Non-Detect	1.98E-04
Maximum Detect	0.0202	Maximum Non-Detect	0.00383
Variance Detects	5.06E-05	Percent Non-Detects	92.68%
Mean Detects	0.00799	SD Detects	0.00711
Median Detects	0.00596	CV Detects	0.89
Skewness Detects	0.791	Kurtosis Detects	-1.031
Mean of Logged Detects	-5.248	SD of Logged Detects	1.014
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.229	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.73E-04	Standard Error of Mean	2.61E-04
SD	0.00272	95% KM (BCA) UCL	0.00136
95% KM (t) UCL	0.0012	95% KM (Percentile Bootstrap) UCL	0.00126
95% KM (z) UCL	0.0012	95% KM Bootstrap t UCL	0.00138
90% KM Chebyshev UCL	0.00155	95% KM Chebyshev UCL	0.00191
97.5% KM Chebyshev UCL	0.0024	99% KM Chebyshev UCL	0.00337
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.48	Anderson-Darling GOF Test	
5% A-D Critical Value	0.737	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.246	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.285	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.335	k star (bias corrected MLE)	0.964
Theta hat (MLE)	0.00599	Theta star (bias corrected MLE)	0.00829
nu hat (MLE)	24.03	nu star (bias corrected)	17.36
MLE Mean (bias corrected)	0.00799	MLE Sd (bias corrected)	0.00814
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0806	nu hat (KM)	19.83
Approximate Chi Square Value (19.83, α)	10.73	Adjusted Chi Square Value (19.83, β)	10.65
95% Gamma Approximate KM-UCL (use when n>=50)	0.00143	95% Gamma Adjusted KM-UCL (use when n<50)	0.00144
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00131 Mean	0.00985
Maximum	0.0202 Median	0.01
SD	0.00189 CV	0.192
k hat (MLE)	1.57E+01 k star (bias corrected MLE)	15.29
Theta hat (MLE)	6.29E-04 Theta star (bias corrected MLE)	6.45E-04
nu hat (MLE)	3853 nu star (bias corrected)	3761
MLE Mean (bias corrected)	0.00985 MLE Sd (bias corrected)	0.00252
	Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (N/A, α)	3619 Adjusted Chi Square Value (N/A, β)	3618
95% Gamma Approximate UCL (use when n>=50)	0.0102 95% Gamma Adjusted UCL (use when n<50)	0.0102
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.906 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829 Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.225 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	6.02E-04 Mean in Log Scale	-10.6
SD in Original Scale	0.00277 SD in Log Scale	1.596
95% t UCL (assumes normality of ROS data)	0.00102 95% Percentile Bootstrap UCL	0.00105
95% BCA Bootstrap UCL	0.00123 95% Bootstrap t UCL	0.00132
95% H-UCL (Log ROS)	1.34E-04	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-8.281 95% H-UCL (KM -Log)	4.50E-04
KM SD (logged)	0.898 95% Critical H Value (KM-Log)	2.1
KM Standard Error of Mean (logged)	0.0868	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.00102 Mean in Log Scale	-7.661
SD in Original Scale	0.0027 SD in Log Scale	0.933
95% t UCL (Assumes normality)	0.00143 95% H-Stat UCL	8.71E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.0012 95% KM (Percentile Bootstrap) UCL	1.26E-03
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (dioxin furans (ng/l)***total tetrachlorodibenzo-p-dioxin (tcdd)***41903-57-5***ng/l***t)		
General Statistics		
Total Number of Observations	123 Number of Distinct Observations	108
Number of Detects	16 Number of Non-Detects	107
Number of Distinct Detects	15 Number of Distinct Non-Detects	98
Minimum Detect	5.53E-04 Minimum Non-Detect	1.86E-04
Maximum Detect	2.83E-03 Maximum Non-Detect	4.22E-03
Variance Detects	4.54E-07 Percent Non-Detects	86.99%
Mean Detects	1.38E-03 SD Detects	6.73E-04
Median Detects	1.14E-03 CV Detects	4.89E-01
Skewness Detects	1.05E+00 Kurtosis Detects	3.73E-01
Mean of Logged Detects	-6.693 SD of Logged Detects	0.468
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.895 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.887 Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.177 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.222 Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	4.14E-04 Standard Error of Mean	5.54E-05
SD	4.95E-04 95% KM (BCA) UCL	5.99E-04
95% KM (t) UCL	5.06E-04 95% KM (Percentile Bootstrap) UCL	5.70E-04
95% KM (z) UCL	5.05E-04 95% KM Bootstrap t UCL	5.05E-04
90% KM Chebyshev UCL	5.80E-04 95% KM Chebyshev UCL	6.56E-04
97.5% KM Chebyshev UCL	7.60E-04 99% KM Chebyshev UCL	9.66E-04

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.288	Anderson-Darling GOF Test
5% A-D Critical Value	0.741	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.134	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.216	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	4.948	k star (bias corrected MLE) 4.062
Theta hat (MLE)	2.78E-04	Theta star (bias corrected MLE) 3.39E-04
nu hat (MLE)	158.3	nu star (bias corrected) 130
MLE Mean (bias corrected)	0.00138	MLE Sd (bias corrected) 6.83E-04
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.701	nu hat (KM) 172.4
Approximate Chi Square Value (172.39, α)	143	Adjusted Chi Square Value (172.39, β) 142.7
95% Gamma Approximate KM-UCL (use when n>=50)	4.99E-04	95% Gamma Adjusted KM-UCL (use when n<50) 5.00E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	5.53E-04	Mean 0.00888
Maximum	0.01	Median 0.01
SD	0.00292	CV 0.329
k hat (MLE)	3.43E+00	k star (bias corrected MLE) 3.356
Theta hat (MLE)	2.59E-03	Theta star (bias corrected MLE) 0.00265
nu hat (MLE)	8.45E+02	nu star (bias corrected) 8.26E+02
MLE Mean (bias corrected)	8.88E-03	MLE Sd (bias corrected) 4.85E-03
		Adjusted Level of Significance (β) 0.048
Approximate Chi Square Value (825.50, α)	759.8	Adjusted Chi Square Value (825.50, β) 759.1
95% Gamma Approximate UCL (use when n>=50)	0.00965	95% Gamma Adjusted UCL (use when n<50) 0.00965
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.975	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.887	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.104	Lilliefors GOF Test
5% Lilliefors Critical Value	0.222	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	4.15E-04	Mean in Log Scale -8.03
SD in Original Scale	4.44E-04	SD in Log Scale 0.57
95% t UCL (assumes normality of ROS data)	4.81E-04	95% Percentile Bootstrap UCL 4.85E-04
95% BCA Bootstrap UCL	5.03E-04	95% Bootstrap t UCL 5.07E-04
95% H-UCL (Log ROS)	4.22E-04	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-8.176	95% H-UCL (KM -Log) 4.28E-04
KM SD (logged)	0.755	95% Critical H Value (KM-Log) 1.987
KM Standard Error of Mean (logged)	0.102	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	6.73E-04	Mean in Log Scale -7.515
SD in Original Scale	4.99E-04	SD in Log Scale 0.639
95% t UCL (Assumes normality)	7.48E-04	95% H-Stat UCL 7.46E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	5.06E-04	95% KM (Percentile Bootstrap) UCL 5.70E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals (ug/l)***aluminum***7429-90-5***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 123
Number of Detects	214	Number of Non-Detects 148
Number of Distinct Detects	120	Number of Distinct Non-Detects 5
Minimum Detect	20	Minimum Non-Detect 100
Maximum Detect	1680	Maximum Non-Detect 700

Variance Detects	30229	Percent Non-Detects	40.88%
Mean Detects	115.9	SD Detects	173.9
Median Detects	65	CV Detects	1.5
Skewness Detects	5.146	Kurtosis Detects	35.95
Mean of Logged Detects	4.268	SD of Logged Detects	0.887
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.528	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.291	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0606	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	97.86	Standard Error of Mean	7.893
SD	141.6	95% KM (BCA) UCL	109.9
95% KM (t) UCL	110.9	95% KM (Percentile Bootstrap) UCL	110.9
95% KM (z) UCL	110.8	95% KM Bootstrap t UCL	114.6
90% KM Chebyshev UCL	121.5	95% KM Chebyshev UCL	132.3
97.5% KM Chebyshev UCL	147.1	99% KM Chebyshev UCL	176.4
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.119	Anderson-Darling GOF Test	
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.14	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0636	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.17	k star (bias corrected MLE)	1.157
Theta hat (MLE)	99.04	Theta star (bias corrected MLE)	100.2
nu hat (MLE)	500.8	nu star (bias corrected)	495.1
MLE Mean (bias corrected)	115.9	MLE Sd (bias corrected)	107.7
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.478	nu hat (KM)	345.9
Approximate Chi Square Value (345.93, α)	303.8	Adjusted Chi Square Value (345.93, β)	303.7
95% Gamma Approximate KM-UCL (use when n>=50)	111.4	95% Gamma Adjusted KM-UCL (use when n<50)	111.5
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	99.16
Maximum	1680	Median	57.61
SD	147.5	CV	1.487
k hat (MLE)	0.462	k star (bias corrected MLE)	0.46
Theta hat (MLE)	214.6	Theta star (bias corrected MLE)	215.5
nu hat (MLE)	334.5	nu star (bias corrected)	333.1
MLE Mean (bias corrected)	99.16	MLE Sd (bias corrected)	146.2
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (333.10, α)	291.8	Adjusted Chi Square Value (333.10, β)	291.7
95% Gamma Approximate UCL (use when n>=50)	113.2	95% Gamma Adjusted UCL (use when n<50)	113.3
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0758	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0606	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	98.15	Mean in Log Scale	4.173
SD in Original Scale	139.7	SD in Log Scale	0.828
95% t UCL (assumes normality of ROS data)	110.3	95% Percentile Bootstrap UCL	111.2
95% BCA Bootstrap UCL	112.6	95% Bootstrap t UCL	114.2
95% H-UCL (Log ROS)	99.77		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	143.9	Mean in Log Scale	4.567
SD in Original Scale	150.4	SD in Log Scale	0.905
95% t UCL (Assumes normality)	157	95% H-Stat UCL	159.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	110.9	95% KM (% Bootstrap) UCL	110.9

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals (ug/l)***antimony***7440-36-0***ug/l****t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	74
Number of Detects	75	Number of Non-Detects	287
Number of Distinct Detects	57	Number of Distinct Non-Detects	20
Minimum Detect	1.1	Minimum Non-Detect	0.5
Maximum Detect	90.9	Maximum Non-Detect	100
Variance Detects	292.1	Percent Non-Detects	79.28%
Mean Detects	10.97	SD Detects	17.09
Median Detects	6.5	CV Detects	1.558
Skewness Detects	3.25	Kurtosis Detects	10.97
Mean of Logged Detects	1.767	SD of Logged Detects	1.028
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.552	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.302	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.102	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.385	Standard Error of Mean	0.541
SD	9.144	95% KM (BCA) UCL	5.376
95% KM (t) UCL	5.278	95% KM (Percentile Bootstrap) UCL	5.286
95% KM (z) UCL	5.275	95% KM Bootstrap t UCL	5.562
90% KM Chebyshev UCL	6.009	95% KM Chebyshev UCL	6.745
97.5% KM Chebyshev UCL	7.766	99% KM Chebyshev UCL	9.772
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.744	Anderson-Darling GOF Test	
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.173	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.106	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.927	k star (bias corrected MLE)	0.899
Theta hat (MLE)	11.84	Theta star (bias corrected MLE)	12.21
nu hat (MLE)	139	nu star (bias corrected)	134.8
MLE Mean (bias corrected)	10.97	MLE Sd (bias corrected)	11.57
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.23	nu hat (KM)	166.5
Approximate Chi Square Value (166.49, α)	137.7	Adjusted Chi Square Value (166.49, β)	137.5
95% Gamma Approximate KM-UCL (use when n>=50)	5.303	95% Gamma Adjusted KM-UCL (use when n<50)	5.307
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.966
Maximum	90.9	Median	0.01
SD	9.624	CV	2.427
k hat (MLE)	0.22	k star (bias corrected MLE)	0.22
Theta hat (MLE)	18.05	Theta star (bias corrected MLE)	18.05
nu hat (MLE)	159	nu star (bias corrected)	159.1
MLE Mean (bias corrected)	3.966	MLE Sd (bias corrected)	8.46
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (159.06, α)	130.9	Adjusted Chi Square Value (159.06, β)	130.8
95% Gamma Approximate UCL (use when n>=50)	4.819	95% Gamma Adjusted UCL (use when n<50)	4.822
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0914	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.102	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.328	Mean in Log Scale	0.701
SD in Original Scale	8.887	SD in Log Scale	1.179
95% t UCL (assumes normality of ROS data)	5.098	95% Percentile Bootstrap UCL	5.125
95% BCA Bootstrap UCL	5.217	95% Bootstrap t UCL	5.359
95% H-UCL (Log ROS)	4.654		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	0.712	95% H-UCL (KM -Log)	4.502
KM SD (logged)	1.146	95% Critical H Value (KM-Log)	2.249
KM Standard Error of Mean (logged)	0.107		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	11.96	Mean in Log Scale	1.862
SD in Original Scale	13.37	SD in Log Scale	1.224
95% t UCL (Assumes normality)	13.12	95% H-Stat UCL	15.81
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	5.376		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals (ug/l)***arsenic***7440-38-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	152
Number of Detects	333	Number of Non-Detects	29
Number of Distinct Detects	143	Number of Distinct Non-Detects	14
Minimum Detect	0.28	Minimum Non-Detect	1
Maximum Detect	22.8	Maximum Non-Detect	17.4
Variance Detects	2.532	Percent Non-Detects	8.01%
Mean Detects	1.451	SD Detects	1.591
Median Detects	1.26	CV Detects	1.097
Skewness Detects	9.774	Kurtosis Detects	112.7
Mean of Logged Detects	0.219	SD of Logged Detects	0.479
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	3.13E-01	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.322	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0486	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.431	Standard Error of Mean	0.0813
SD	1.535	95% KM (BCA) UCL	1.582
95% KM (t) UCL	1.565	95% KM (Percentile Bootstrap) UCL	1.577
95% KM (z) UCL	1.565	95% KM Bootstrap t UCL	1.68
90% KM Chebyshev UCL	1.675	95% KM Chebyshev UCL	1.785
97.5% KM Chebyshev UCL	1.939	99% KM Chebyshev UCL	2.24
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.00E+28	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.177	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0501	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.417	k star (bias corrected MLE)	3.388
Theta hat (MLE)	0.425	Theta star (bias corrected MLE)	0.428
nu hat (MLE)	2275	nu star (bias corrected)	2256
MLE Mean (bias corrected)	1.451	MLE Sd (bias corrected)	0.788
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.869	nu hat (KM)	628.8
Approximate Chi Square Value (628.81, α)	571.6	Adjusted Chi Square Value (628.81, β)	571.4
95% Gamma Approximate KM-UCL (use when n>=50)	1.574	95% Gamma Adjusted KM-UCL (use when n<50)	1.575
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.243	Mean	1.426
Maximum	22.8	Median	1.255
SD	1.539	CV	1.079
k hat (MLE)	3.34	k star (bias corrected MLE)	3.314
Theta hat (MLE)	0.427	Theta star (bias corrected MLE)	0.43

nu hat (MLE)	2418	nu star (bias corrected)	2399
MLE Mean (bias corrected)	1.426	MLE Sd (bias corrected)	0.783
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2287	Adjusted Chi Square Value (N/A, β)	2286
95% Gamma Approximate UCL (use when n>=50)	1.497	95% Gamma Adjusted UCL (use when n<50)	1.497
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.123	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0486	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.428	Mean in Log Scale	0.21
SD in Original Scale	1.532	SD in Log Scale	0.47
95% t UCL (assumes normality of ROS data)	1.561	95% Percentile Bootstrap UCL	1.577
95% BCA Bootstrap UCL	1.63	95% Bootstrap t UCL	1.686
95% H-UCL (Log ROS)	1.439		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.612	Mean in Log Scale	0.275
SD in Original Scale	1.76	SD in Log Scale	0.558
95% t UCL (Assumes normality)	1.764	95% H-Stat UCL	1.623
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	1.582		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals (ug/l))***barium***7440-39-3***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	162
		Number of Missing Observations	0
Minimum	7	Mean	20.93
Maximum	69.6	Median	20.3
SD	6.045	Std. Error of Mean	0.318
Coefficient of Variation	0.289	Skewness	1.916
Normal GOF Test			
Shapiro Wilk Test Statistic	0.92	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0834	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	21.45	95% Adjusted-CLT UCL (Chen-1995)	21.49
		95% Modified-t UCL (Johnson-1978)	21.46
Gamma GOF Test			
A-D Test Statistic	1.215	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.753	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0454	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0478	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	13.51	k star (bias corrected MLE)	13.4
Theta hat (MLE)	1.549	Theta star (bias corrected MLE)	1.562
nu hat (MLE)	9783	nu star (bias corrected)	9704
MLE Mean (bias corrected)	20.93	MLE Sd (bias corrected)	5.717
		Approximate Chi Square Value (0.05)	9476
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	9475
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	21.43	95% Adjusted Gamma UCL (use when n<50)	21.43
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.99	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.928	Data appear Lognormal at 5% Significance Level	

Lilliefors Test Statistic	0.0395	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.946	Mean of logged Data	3.004
Maximum of Logged Data	4.243	SD of logged Data	0.273
Assuming Lognormal Distribution			
95% H-UCL	21.44	90% Chebyshev (MVUE) UCL	21.84
95% Chebyshev (MVUE) UCL	22.25	97.5% Chebyshev (MVUE) UCL	22.83
99% Chebyshev (MVUE) UCL	23.96		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	21.45	95% Jackknife UCL	21.45
95% Standard Bootstrap UCL	21.44	95% Bootstrap-t UCL	21.48
95% Hall's Bootstrap UCL	21.51	95% Percentile Bootstrap UCL	21.44
95% BCA Bootstrap UCL	21.47		
90% Chebyshev(Mean, Sd) UCL	21.88	95% Chebyshev(Mean, Sd) UCL	22.31
97.5% Chebyshev(Mean, Sd) UCL	22.91	99% Chebyshev(Mean, Sd) UCL	24.09
Suggested UCL to Use			
95% Approximate Gamma UCL	21.43		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals (ug/l))***cadmium***7440-43-9***ug/l****)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	8
Number of Detects	14	Number of Non-Detects	348
Number of Distinct Detects	3	Number of Distinct Non-Detects	5
Minimum Detect	0.1	Minimum Non-Detect	0.5
Maximum Detect	1.1	Maximum Non-Detect	25
Variance Detects	0.0699	Percent Non-Detects	96.13%
Mean Detects	0.193	SD Detects	0.264
Median Detects	0.1	CV Detects	1.371
Skewness Detects	3.583	Kurtosis Detects	13.12
Mean of Logged Detects	-1.983	SD of Logged Detects	0.666
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.397	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.418	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.188	Standard Error of Mean	0.0663
SD	0.247	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.297	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.297	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.387	95% KM Chebyshev UCL	0.477
97.5% KM Chebyshev UCL	0.602	99% KM Chebyshev UCL	0.848
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.052	Anderson-Darling GOF Test	
5% A-D Critical Value	0.749	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.399	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.232	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.631	k star (bias corrected MLE)	1.329
Theta hat (MLE)	0.118	Theta star (bias corrected MLE)	0.145
nu hat (MLE)	45.66	nu star (bias corrected)	37.21
MLE Mean (bias corrected)	0.193	MLE Sd (bias corrected)	0.167
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.58	nu hat (KM)	420.1
Approximate Chi Square Value (420.13, α)	373.6	Adjusted Chi Square Value (420.13, β)	373.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.212	95% Gamma Adjusted KM-UCL (use when n<50)	0.212
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	0.204
Maximum	1.103 Median	0.137
SD	0.212 CV	1.039
k hat (MLE)	0.816 k star (bias corrected MLE)	0.811
Theta hat (MLE)	0.25 Theta star (bias corrected MLE)	0.251
nu hat (MLE)	590.5 nu star (bias corrected)	586.9
MLE Mean (bias corrected)	0.204 MLE Sd (bias corrected)	0.226
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (586.90, α)	531.7 Adjusted Chi Square Value (586.90, β)	531.5
95% Gamma Approximate UCL (use when n>=50)	0.225 95% Gamma Adjusted UCL (use when n<50)	0.225
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.553 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874 Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.399 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.158 Mean in Log Scale	-1.996
SD in Original Scale	0.101 SD in Log Scale	0.545
95% t UCL (assumes normality of ROS data)	0.167 95% Percentile Bootstrap UCL	0.167
95% BCA Bootstrap UCL	0.169 95% Bootstrap t UCL	0.168
95% H-UCL (Log ROS)	0.166	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	5.068 Mean in Log Scale	1.137
SD in Original Scale	4.708 SD in Log Scale	1.085
95% t UCL (Assumes normality)	5.476 95% H-Stat UCL	6.364
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.297 95% KM (% Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals (ug/l)***calcium***7440-70-2***ug/l****t)		
General Statistics		
Total Number of Observations	362 Number of Distinct Observations	100
	Number of Missing Observations	0
Minimum	140000 Mean	260964
Maximum	320000 Median	268000
SD	28504 Std. Error of Mean	1498
Coefficient of Variation	0.109 Skewness	-1.333
Normal GOF Test		
Shapiro Wilk Test Statistic	0.9 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.12 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	263435 95% Adjusted-CLT UCL (Chen-1995)	263316
	95% Modified-t UCL (Johnson-1978)	263417
Gamma GOF Test		
A-D Test Statistic	12.92 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.132 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	73.89 k star (bias corrected MLE)	73.28

Theta hat (MLE)	3532	Theta star (bias corrected MLE)	3561
nu hat (MLE)	53498	nu star (bias corrected)	53056
MLE Mean (bias corrected)	260964	MLE Sd (bias corrected)	30485
		Approximate Chi Square Value (0.05)	52521
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	52519
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	263621	95% Adjusted Gamma UCL (use when n<50)	263631
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.845	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.138	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	11.85	Mean of logged Data	12.47
Maximum of Logged Data	12.68	SD of logged Data	0.121
Assuming Lognormal Distribution			
95% H-UCL	263879	90% Chebyshev (MVUE) UCL	266089
95% Chebyshev (MVUE) UCL	268352	97.5% Chebyshev (MVUE) UCL	271491
99% Chebyshev (MVUE) UCL	277659		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	263428	95% Jackknife UCL	263435
95% Standard Bootstrap UCL	263374	95% Bootstrap-t UCL	263422
95% Hall's Bootstrap UCL	263296	95% Percentile Bootstrap UCL	263323
95% BCA Bootstrap UCL	263166		
90% Chebyshev(Mean, Sd) UCL	265458	95% Chebyshev(Mean, Sd) UCL	267494
97.5% Chebyshev(Mean, Sd) UCL	270320	99% Chebyshev(Mean, Sd) UCL	275870
Suggested UCL to Use			
95% Student's-t UCL	263435	or 95% Modified-t UCL	263417
<p>Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.</p>			
<p>Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.</p>			
RESULT_VALUE (metals (ug/l))***chromium***7440-47-3***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	31
Number of Detects	35	Number of Non-Detects	327
Number of Distinct Detects	25	Number of Distinct Non-Detects	8
Minimum Detect	0.5	Minimum Non-Detect	0.6
Maximum Detect	10.4	Maximum Non-Detect	50
Variance Detects	6.018	Percent Non-Detects	90.33%
Mean Detects	3.52	SD Detects	245.30%
Median Detects	2.5	CV Detects	0.697
Skewness Detects	1.281	Kurtosis Detects	1.008
Mean of Logged Detects	1.036	SD of Logged Detects	0.693
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.846	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.934	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.244	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.15	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.488	Standard Error of Mean	0.29
SD	2.12	95% KM (BCA) UCL	3.008
95% KM (t) UCL	2.966	95% KM (Percentile Bootstrap) UCL	3.003
95% KM (z) UCL	2.965	95% KM Bootstrap t UCL	3.028
90% KM Chebyshev UCL	3.357	95% KM Chebyshev UCL	3.751
97.5% KM Chebyshev UCL	4.297	99% KM Chebyshev UCL	5.371
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.009	Anderson-Darling GOF Test	
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.177	Kolmogrov-Smirnoff GOF	

5% K-S Critical Value	0.15	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.396	k star (bias corrected MLE) 2.21
Theta hat (MLE)	1.469	Theta star (bias corrected MLE) 1.593
nu hat (MLE)	167.7	nu star (bias corrected) 154.7
MLE Mean (bias corrected)	3.52	MLE Sd (bias corrected) 2.368
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.377	nu hat (KM) 996.9
Approximate Chi Square Value (996.92, α)	924.6	Adjusted Chi Square Value (996.92, β) 924.4
95% Gamma Approximate KM-UCL (use when n>=50)	2.683	95% Gamma Adjusted KM-UCL (use when n<50) 2.683
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 2.448
Maximum	10.4	Median 2
SD	2.038	CV 0.833
k hat (MLE)	0.915	k star (bias corrected MLE) 0.909
Theta hat (MLE)	2.676	Theta star (bias corrected MLE) 2.693
nu hat (MLE)	662.2	nu star (bias corrected) 658.1
MLE Mean (bias corrected)	2.448	MLE Sd (bias corrected) 2.568
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (658.07, α)	599.6	Adjusted Chi Square Value (658.07, β) 599.3
95% Gamma Approximate UCL (use when n>=50)	2.687	95% Gamma Adjusted UCL (use when n<50) 2.688
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.945	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.934	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.132	Lilliefors GOF Test
5% Lilliefors Critical Value	0.15	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.479	Mean in Log Scale 0.63
SD in Original Scale	1.998	SD in Log Scale 0.753
95% t UCL (assumes normality of ROS data)	2.652	95% Percentile Bootstrap UCL 2.658
95% BCA Bootstrap UCL	2.658	95% Bootstrap t UCL 2.665
95% H-UCL (Log ROS)	2.692	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	0.546	95% H-UCL (KM -Log) 2.831
KM SD (logged)	0.893	95% Critical H Value (KM-Log) 2.043
KM Standard Error of Mean (logged)	0.131	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	10.35	Mean in Log Scale 1.925
SD in Original Scale	9.201	SD in Log Scale 0.964
95% t UCL (Assumes normality)	11.15	95% H-Stat UCL 12.13
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	2.966	95% KM (% Bootstrap) UCL 300.30%
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals (ug/l)***cobalt***7440-48-4***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 11
Number of Detects	15	Number of Non-Detects 347
Number of Distinct Detects	5	Number of Distinct Non-Detects 6
Minimum Detect	0.1	Minimum Non-Detect 2
Maximum Detect	1.1	Maximum Non-Detect 40
Variance Detects	0.0607	Percent Non-Detects 95.86%
Mean Detects	0.273	SD Detects 0.246
Median Detects	0.2	CV Detects 90.10%
Skewness Detects	3.002	Kurtosis Detects 10.29
Mean of Logged Detects	-1.526	SD of Logged Detects 0.647

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.617	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.324	Lilliefors GOF Test
5% Lilliefors Critical Value	0.229	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.273	Standard Error of Mean 0.0636
SD	0.238	95% KM (BCA) UCL 0.389
95% KM (t) UCL	0.378	95% KM (Percentile Bootstrap) UCL 0.392
95% KM (z) UCL	0.378	95% KM Bootstrap t UCL 0.526
90% KM Chebyshev UCL	0.464	95% KM Chebyshev UCL 0.551
97.5% KM Chebyshev UCL	0.67	99% KM Chebyshev UCL 0.906
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.948	Anderson-Darling GOF Test
5% A-D Critical Value	0.746	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.225	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.224	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.334	k star (bias corrected MLE) 1.912
Theta hat (MLE)	0.117	Theta star (bias corrected MLE) 0.143
nu hat (MLE)	70.03	nu star (bias corrected) 57.36
MLE Mean (bias corrected)	0.273	MLE Sd (bias corrected) 0.198
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.319	nu hat (KM) 955.3
Approximate Chi Square Value (955.29, α)	884.6	Adjusted Chi Square Value (955.29, β) 884.3
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.295	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.295
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.285
Maximum	1.187	Median 0.235
SD	0.231	CV 0.809
k hat (MLE)	1.215	k star (bias corrected MLE) 1.206
Theta hat (MLE)	0.235	Theta star (bias corrected MLE) 0.237
nu hat (MLE)	879.4	nu star (bias corrected) 873.4
MLE Mean (bias corrected)	0.285	MLE Sd (bias corrected) 0.26
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (873.42, α)	805.8	Adjusted Chi Square Value (873.42, β) 805.6
95% Gamma Approximate UCL (use when $n \geq 50$)	0.309	95% Gamma Adjusted UCL (use when $n < 50$) 0.31
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.874	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.881	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.182	Lilliefors GOF Test
5% Lilliefors Critical Value	0.229	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.27	Mean in Log Scale -1.526
SD in Original Scale	0.191	SD in Log Scale 0.659
95% t UCL (assumes normality of ROS data)	0.286	95% Percentile Bootstrap UCL 0.287
95% BCA Bootstrap UCL	0.287	95% Bootstrap t UCL 0.287
95% H-UCL (Log ROS)	0.288	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-1.526	95% H-UCL (KM -Log) 0.281
KM SD (logged)	0.625	95% Critical H Value (KM-Log) 1.862
KM Standard Error of Mean (logged)	0.167	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	5.895	Mean in Log Scale 1.253
SD in Original Scale	5.533	SD in Log Scale 1.111
95% t UCL (Assumes normality)	6.375	95% H-Stat UCL 7.385
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		

95% KM (t) UCL0.378 95% KM (% Bootstrap) UCL39.20%

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals (ug/l)***copper***7440-50-8***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	87
Number of Detects	237	Number of Non-Detects	125
Number of Distinct Detects	82	Number of Distinct Non-Detects	8
Minimum Detect	1	Minimum Non-Detect	1.8
Maximum Detect	90.2	Maximum Non-Detect	100
Variance Detects	44.91	Percent Non-Detects	34.53%
Mean Detects	4.881	SD Detects	6.702
Median Detects	3.3	CV Detects	1.373
Skewness Detects	9.269	Kurtosis Detects	112.3
Mean of Logged Detects	1.318	SD of Logged Detects	0.617
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.407	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.289	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0576	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.592	Standard Error of Mean	0.322
SD	5.73	95% KM (BCA) UCL	5.169
95% KM (t) UCL	5.123	95% KM (Percentile Bootstrap) UCL	5.173
95% KM (z) UCL	5.121	95% KM Bootstrap t UCL	5.369
90% KM Chebyshev UCL	5.557	95% KM Chebyshev UCL	5.994
97.5% KM Chebyshev UCL	6.601	99% KM Chebyshev UCL	7.792
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	13.67	Anderson-Darling GOF Test	
5% A-D Critical Value	0.766	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.189	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0601	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.025	k star (bias corrected MLE)	2.002
Theta hat (MLE)	2.41	Theta star (bias corrected MLE)	2.438
nu hat (MLE)	959.7	nu star (bias corrected)	948.9
MLE Mean (bias corrected)	4.881	MLE Sd (bias corrected)	3.449
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.642	nu hat (KM)	465
Approximate Chi Square Value (465.02, α)	416	Adjusted Chi Square Value (465.02, β)	415.8
95% Gamma Approximate KM-UCL (use when n>=50)	5.133	95% Gamma Adjusted KM-UCL (use when n<50)	5.135
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	4.634
Maximum	90.2	Median	3.3
SD	5.897	CV	1.272
k hat (MLE)	1.01	k star (bias corrected MLE)	1.003
Theta hat (MLE)	4.589	Theta star (bias corrected MLE)	4.619
nu hat (MLE)	731.1	nu star (bias corrected)	726.4
MLE Mean (bias corrected)	4.634	MLE Sd (bias corrected)	4.627
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (726.41, α)	664.9	Adjusted Chi Square Value (726.41, β)	664.6
95% Gamma Approximate UCL (use when n>=50)	5.063	95% Gamma Adjusted UCL (use when n<50)	5.065
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.131	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0576	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.56	Mean in Log Scale	1.287
SD in Original Scale	5.589	SD in Log Scale	0.597
95% t UCL (assumes normality of ROS data)	5.045	95% Percentile Bootstrap UCL	5.094
95% BCA Bootstrap UCL	5.286	95% Bootstrap t UCL	5.334

95% H-UCL (Log ROS)	4.585	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	9.58	Mean in Log Scale 1.775
SD in Original Scale	10.57	SD in Log Scale 0.952
95% t UCL (Assumes normality)	10.5	95% H-Stat UCL 10.31
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	5.169

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals (ug/l)***iron***7439-89-6***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 187
Number of Detects	260	Number of Non-Detects 102
Number of Distinct Detects	185	Number of Distinct Non-Detects 3
Minimum Detect	130	Minimum Non-Detect 50
Maximum Detect	3470	Maximum Non-Detect 2500
Variance Detects	86297	Percent Non-Detects 28.18%
Mean Detects	359.5	SD Detects 293.8
Median Detects	284	CV Detects 0.817
Skewness Detects	6.312	Kurtosis Detects 55.5
Mean of Logged Detects	5.744	SD of Logged Detects 0.467

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.533	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.225	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0549	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	354.5	Standard Error of Mean 16.13
SD	274.6	95% KM (BCA) UCL 382.7
95% KM (t) UCL	381.1	95% KM (Percentile Bootstrap) UCL 382
95% KM (z) UCL	381.1	95% KM Bootstrap t UCL 387.4
90% KM Chebyshev UCL	402.9	95% KM Chebyshev UCL 424.9
97.5% KM Chebyshev UCL	455.3	99% KM Chebyshev UCL 515

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	9.381	Anderson-Darling GOF Test
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.129	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.057	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	3.701	k star (bias corrected MLE) 3.661
Theta hat (MLE)	97.14	Theta star (bias corrected MLE) 98.2
nu hat (MLE)	1925	nu star (bias corrected) 1904
MLE Mean (bias corrected)	359.5	MLE Sd (bias corrected) 187.9

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.667	nu hat (KM) 1207
Approximate Chi Square Value (N/A, α)	1127	Adjusted Chi Square Value (N/A, β) 1127
95% Gamma Approximate KM-UCL (use when n>=50)	379.6	95% Gamma Adjusted KM-UCL (use when n<50) 379.7

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 356
Maximum	3470	Median 290.3
SD	275.8	CV 0.775
k hat (MLE)	2.373	k star (bias corrected MLE) 2.355
Theta hat (MLE)	150	Theta star (bias corrected MLE) 151.2
nu hat (MLE)	1718	nu star (bias corrected) 1705
MLE Mean (bias corrected)	356	MLE Sd (bias corrected) 232
		Adjusted Level of Significance (β) 0.0493

Approximate Chi Square Value (N/A, α)	1610	Adjusted Chi Square Value (N/A, β)	1610
95% Gamma Approximate UCL (use when $n \geq 50$)	377	95% Gamma Adjusted UCL (use when $n < 50$)	377.1
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0935	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0549	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	352.9	Mean in Log Scale	5.737
SD in Original Scale	261.7	SD in Log Scale	0.462
95% t UCL (assumes normality of ROS data)	375.6	95% Percentile Bootstrap UCL	375.4
95% BCA Bootstrap UCL	380.3	95% Bootstrap t UCL	382.8
95% H-UCL (Log ROS)	360.2		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	601.5	Mean in Log Scale	6.115
SD in Original Scale	470.1	SD in Log Scale	0.751
95% t UCL (Assumes normality)	642.3	95% H-Stat UCL	647.8
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	382.7		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals (ug/l)***lead***7439-92-1***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	41
Number of Detects	77	Number of Non-Detects	285
Number of Distinct Detects	37	Number of Distinct Non-Detects	4
Minimum Detect	0.5	Minimum Non-Detect	5
Maximum Detect	16.4	Maximum Non-Detect	50
Variance Detects	6.832	Percent Non-Detects	78.73%
Mean Detects	3.342	SD Detects	2.614
Median Detects	2.7	CV Detects	0.782
Skewness Detects	2.872	Kurtosis Detects	11.8
Mean of Logged Detects	0.961	SD of Logged Detects	0.737
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.749	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.151	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.101	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.035	Standard Error of Mean	0.191
SD	1.947	95% KM (BCA) UCL	3.344
95% KM (t) UCL	3.35	95% KM (Percentile Bootstrap) UCL	3.342
95% KM (z) UCL	3.349	95% KM Bootstrap t UCL	3.351
90% KM Chebyshev UCL	3.609	95% KM Chebyshev UCL	3.868
97.5% KM Chebyshev UCL	4.229	99% KM Chebyshev UCL	4.938
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.051	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.111	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.103	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.188	k star (bias corrected MLE)	2.111
Theta hat (MLE)	1.527	Theta star (bias corrected MLE)	1.583
nu hat (MLE)	336.9	nu star (bias corrected)	325.1
MLE Mean (bias corrected)	3.342	MLE Sd (bias corrected)	2.3
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.429	nu hat (KM)	1758
Approximate Chi Square Value (N/A, α)	1662	Adjusted Chi Square Value (N/A, β)	1662
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	3.211	95% Gamma Adjusted KM-UCL (use when $n < 50$)	3.212

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0742	Mean 3.075
Maximum	16.4	Median 2.609
SD	2.143	CV 0.697
k hat (MLE)	2.089	k star (bias corrected MLE) 2.074
Theta hat (MLE)	1.472	Theta star (bias corrected MLE) 1.483
nu hat (MLE)	1513	nu star (bias corrected) 1501
MLE Mean (bias corrected)	3.075	MLE Sd (bias corrected) 2.135
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1412	Adjusted Chi Square Value (N/A, β) 1412
95% Gamma Approximate UCL (use when n>=50)	3.269	95% Gamma Adjusted UCL (use when n<50) 3.27
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.138	Lilliefors GOF Test
5% Lilliefors Critical Value	0.101	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3.041	Mean in Log Scale 0.9
SD in Original Scale	2.138	SD in Log Scale 0.663
95% t UCL (assumes normality of ROS data)	3.226	95% Percentile Bootstrap UCL 3.221
95% BCA Bootstrap UCL	3.23	95% Bootstrap t UCL 3.243
95% H-UCL (Log ROS)	3.273	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	10.18	Mean in Log Scale 1.901
SD in Original Scale	9.353	SD in Log Scale 0.93
95% t UCL (Assumes normality)	10.99	95% H-Stat UCL 11.42
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	3.35	95% KM (% Bootstrap) UCL 3.342
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals (ug/l)***magnesium***7439-95-4***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 209
		Number of Missing Observations 0
Minimum	300000	Mean 815544
Maximum	1140000	Median 826500
SD	113241	Std. Error of Mean #####
Coefficient of Variation	0.139	Skewness -0.975
Normal GOF Test		
Shapiro Wilk Test Statistic	0.923	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.126	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	825359	95% Adjusted-CLT UCL (Chen-1995) 825008
		95% Modified-t UCL (Johnson-1978) 825308
Gamma GOF Test		
A-D Test Statistic	13.51	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.15	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	44.4	k star (bias corrected MLE) 44.03
Theta hat (MLE)	18370	Theta star (bias corrected MLE) 18522
nu hat (MLE)	32143	nu star (bias corrected) 31878

MLE Mean (bias corrected)	815544	MLE Sd (bias corrected)	122906
		Approximate Chi Square Value (0.05)	31464
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	31462
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	826280	95% Adjusted Gamma UCL (use when n<50)	826322
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.842	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.162	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	12.61	Mean of logged Data	13.6
Maximum of Logged Data	13.95	SD of logged Data	0.158
Assuming Lognormal Distribution			
95% H-UCL	827976	90% Chebyshev (MVUE) UCL	836995
95% Chebyshev (MVUE) UCL	846277	97.5% Chebyshev (MVUE) UCL	859160
99% Chebyshev (MVUE) UCL	884466		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	825334	95% Jackknife UCL	825359
95% Standard Bootstrap UCL	825102	95% Bootstrap-t UCL	824918
95% Hall's Bootstrap UCL	824948	95% Percentile Bootstrap UCL	825083
95% BCA Bootstrap UCL	824798		
90% Chebyshev(Mean, Sd) UCL	833400	95% Chebyshev(Mean, Sd) UCL	841488
97.5% Chebyshev(Mean, Sd) UCL	852713	99% Chebyshev(Mean, Sd) UCL	874764
Suggested UCL to Use			
95% Student's-t UCL	825359	or 95% Modified-t UCL	825308
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE (metals (ug/l)***manganese***7439-96-5***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	304
		Number of Missing Observations	0
Minimum	13.9	Mean	75.31
Maximum	248.9	Median	74.9
SD	32.43	Std. Error of Mean	1.705
Coefficient of Variation	0.431	Skewness	0.837
Normal GOF Test			
Shapiro Wilk Test Statistic	0.957	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	8.38E-10	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0529	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	78.12	95% Adjusted-CLT UCL (Chen-1995)	78.2
		95% Modified-t UCL (Johnson-1978)	78.13
Gamma GOF Test			
A-D Test Statistic	3.109	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0855	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.048	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.921	k star (bias corrected MLE)	4.882
Theta hat (MLE)	15.31	Theta star (bias corrected MLE)	15.43
nu hat (MLE)	3562	nu star (bias corrected)	3534
MLE Mean (bias corrected)	75.31	MLE Sd (bias corrected)	34.09

	Approximate Chi Square Value (0.05)	3397
Adjusted Level of Significance	0.0493 Adjusted Chi Square Value	3397
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	78.35 95% Adjusted Gamma UCL (use when n<50)	78.36
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.935 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0 Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.116 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466 Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	2.632 Mean of logged Data	4.217
Maximum of Logged Data	5.517 SD of logged Data	0.49
Assuming Lognormal Distribution		
95% H-UCL	80.04 90% Chebyshev (MVUE) UCL	82.64
95% Chebyshev (MVUE) UCL	85.46 97.5% Chebyshev (MVUE) UCL	89.38
99% Chebyshev (MVUE) UCL	97.08	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	78.12 95% Jackknife UCL	78.12
95% Standard Bootstrap UCL	78.03 95% Bootstrap-t UCL	78.35
95% Hall's Bootstrap UCL	78.19 95% Percentile Bootstrap UCL	78.14
95% BCA Bootstrap UCL	78.11	
90% Chebyshev(Mean, Sd) UCL	80.42 95% Chebyshev(Mean, Sd) UCL	82.74
97.5% Chebyshev(Mean, Sd) UCL	85.96 99% Chebyshev(Mean, Sd) UCL	92.27
Suggested UCL to Use		
95% Student's-t UCL	7.81E+01 or 95% Modified-t UCL	7813.00%
<p>Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.</p>		
RESULT_VALUE (metals (ug/l)***mercury***7439-97-6***ug/l***t)		
General Statistics		
Total Number of Observations	362 Number of Distinct Observations	285
Number of Detects	360 Number of Non-Detects	2
Number of Distinct Detects	283 Number of Distinct Non-Detects	2
Minimum Detect	0.00105 Minimum Non-Detect	4.00E-04
Maximum Detect	0.278 Maximum Non-Detect	1.65E-03
Variance Detects	2.84E-04 Percent Non-Detects	0.55%
Mean Detects	0.00691 SD Detects	0.0168
Median Detects	0.00409 CV Detects	2.435
Skewness Detects	12.7 Kurtosis Detects	192.5
Mean of Logged Detects	-5.417 SD of Logged Detects	0.745
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	2.59E-01 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.364 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00688 Standard Error of Mean	8.83E-04
SD	0.0168 95% KM (BCA) UCL	0.00853
95% KM (t) UCL	0.00834 95% KM (Percentile Bootstrap) UCL	0.00845
95% KM (z) UCL	0.00833 95% KM Bootstrap t UCL	0.00997
90% KM Chebyshev UCL	0.00953 95% KM Chebyshev UCL	0.0107
97.5% KM Chebyshev UCL	0.0124 99% KM Chebyshev UCL	0.0157
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.78E+28 Anderson-Darling GOF Test	
5% A-D Critical Value	0.778 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.188 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0491 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.269 k star (bias corrected MLE)	1.26
Theta hat (MLE)	0.00545 Theta star (bias corrected MLE)	0.00548

nu hat (MLE)	913.8	nu star (bias corrected)	907.5
MLE Mean (bias corrected)	0.00691	MLE Sd (bias corrected)	0.00616
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.168	nu hat (KM)	121.8
Approximate Chi Square Value (121.81, α)	97.33	Adjusted Chi Square Value (121.81, β)	97.24
95% Gamma Approximate KM-UCL (use when n>=50)	0.00861	95% Gamma Adjusted KM-UCL (use when n<50)	0.00862
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00105	Mean	0.00693
Maximum	0.278	Median	0.41%
SD	0.0168	CV	2.423
k hat (MLE)	1.274	k star (bias corrected MLE)	1.266
Theta hat (MLE)	0.00544	Theta star (bias corrected MLE)	0.00548
nu hat (MLE)	922.7	nu star (bias corrected)	916.4
MLE Mean (bias corrected)	0.00693	MLE Sd (bias corrected)	0.00616
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (916.41, α)	847.1	Adjusted Chi Square Value (916.41, β)	846.9
95% Gamma Approximate UCL (use when n>=50)	0.0075	95% Gamma Adjusted UCL (use when n<50)	0.0075
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0944	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00688	Mean in Log Scale	-5.427
SD in Original Scale	0.0168	SD in Log Scale	0.755
95% t UCL (assumes normality of ROS data)	0.00834	95% Percentile Bootstrap UCL	0.00839
95% BCA Bootstrap UCL	0.00929	95% Bootstrap t UCL	0.00996
95% H-UCL (Log ROS)	0.00631		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00688	Mean in Log Scale	-5.431
SD in Original Scale	0.0168	SD in Log Scale	0.765
95% t UCL (Assumes normality)	0.00833	95% H-Stat UCL	0.00635
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00853		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals (ug/l))***nickel***7440-02-0***ug/l****t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	57
Number of Detects	213	Number of Non-Detects	149
Number of Distinct Detects	54	Number of Distinct Non-Detects	8
Minimum Detect	0.8	Minimum Non-Detect	0.8
Maximum Detect	19.3	Maximum Non-Detect	50
Variance Detects	8.263	Percent Non-Detects	41.16%
Mean Detects	2.762	SD Detects	2.874
Median Detects	1.8	CV Detects	1.041
Skewness Detects	3.234	Kurtosis Detects	11.75
Mean of Logged Detects	0.743	SD of Logged Detects	0.644
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.586	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.293	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0607	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.585	Standard Error of Mean	0.167
SD	2.652	95% KM (BCA) UCL	2.884
95% KM (t) UCL	2.86	95% KM (Percentile Bootstrap) UCL	2.862
95% KM (z) UCL	2.859	95% KM Bootstrap t UCL	2.917

90% KM Chebyshev UCL	3.085	95% KM Chebyshev UCL	3.311
97.5% KM Chebyshev UCL	3.626	99% KM Chebyshev UCL	4.243

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	15.27	Anderson-Darling GOF Test
5% A-D Critical Value	0.767	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.203	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.063	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.983	k star (bias corrected MLE)	1.958
Theta hat (MLE)	1.393	Theta star (bias corrected MLE)	1.411
nu hat (MLE)	844.8	nu star (bias corrected)	834.3
MLE Mean (bias corrected)	2.762	MLE Sd (bias corrected)	1.974

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.95	nu hat (KM)	688.1
Approximate Chi Square Value (688.13, α)	628.3	Adjusted Chi Square Value (688.13, β)	628
95% Gamma Approximate KM-UCL (use when n>=50)	2.831	95% Gamma Adjusted KM-UCL (use when n<50)	2.832

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	2.589
Maximum	19.3	Median	1.8
SD	2.601	CV	1.005
k hat (MLE)	1.089	k star (bias corrected MLE)	1.082
Theta hat (MLE)	2.377	Theta star (bias corrected MLE)	2.393
nu hat (MLE)	788.5	nu star (bias corrected)	783.3
MLE Mean (bias corrected)	2.589	MLE Sd (bias corrected)	2.489
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (783.32, α)	719.4	Adjusted Chi Square Value (783.32, β)	#####
95% Gamma Approximate UCL (use when n>=50)	2.819	95% Gamma Adjusted UCL (use when n<50)	2.82

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.144 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0607 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.542	Mean in Log Scale	0.7
SD in Original Scale	2.377	SD in Log Scale	0.621
95% t UCL (assumes normality of ROS data)	2.748	95% Percentile Bootstrap UCL	2.757
95% BCA Bootstrap UCL	2.756	95% Bootstrap t UCL	2.774
95% H-UCL (Log ROS)	2.594		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.986	Mean in Log Scale	1.285
SD in Original Scale	6.109	SD in Log Scale	1.002
95% t UCL (Assumes normality)	6.515	95% H-Stat UCL	6.679
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	2.86	95% KM (% Bootstrap) UCL	2.862

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals (ug/l))***potassium***|7440-09-7***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	135
		Number of Missing Observations	0
Minimum	120000	Mean	252500
Maximum	467000	Median	249000
SD	49064	Std. Error of Mean	2579
Coefficient of Variation	0.194	Skewness	1.489

Normal GOF Test			
Shapiro Wilk Test Statistic	0.888	Shapiro Wilk GOF Test	

5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.0947	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	256753	95% Adjusted-CLT UCL (Chen-1995)	256957
		95% Modified-t UCL (Johnson-1978)	256786
Gamma GOF Test			
A-D Test Statistic	4.284	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.751	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0731	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	29.29	k star (bias corrected MLE)	29.05
Theta hat (MLE)	8620	Theta star (bias corrected MLE)	8691
nu hat (MLE)	21208	nu star (bias corrected)	21033
MLE Mean (bias corrected)	252500	MLE Sd (bias corrected)	46846
		Approximate Chi Square Value (0.05)	20697
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	20696
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	256602	95% Adjusted Gamma UCL (use when n<50)	256618
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.956	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.85E-10	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0675	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	11.7	Mean of logged Data	12.42
Maximum of Logged Data	13.05	SD of logged Data	0.183
Assuming Lognormal Distribution			
95% H-UCL	256515	90% Chebyshev (MVUE) UCL	259737
95% Chebyshev (MVUE) UCL	263065	97.5% Chebyshev (MVUE) UCL	267685
99% Chebyshev (MVUE) UCL	276760		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	256742	95% Jackknife UCL	256753
95% Standard Bootstrap UCL	256628	95% Bootstrap-t UCL	256787
95% Hall's Bootstrap UCL	257082	95% Percentile Bootstrap UCL	256945
95% BCA Bootstrap UCL	257006		
90% Chebyshev(Mean, Sd) UCL	260236	95% Chebyshev(Mean, Sd) UCL	263740
97.5% Chebyshev(Mean, Sd) UCL	268604	99% Chebyshev(Mean, Sd) UCL	278158
Suggested UCL to Use			
95% Student's-t UCL	256753	or 95% Modified-t UCL	#####
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals (ug/l)***selenium***7782-49-2***ug/l****)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	37
Number of Detects	29	Number of Non-Detects	333
Number of Distinct Detects	27	Number of Distinct Non-Detects	10
Minimum Detect	0.611	Minimum Non-Detect	1.43
Maximum Detect	3.61	Maximum Non-Detect	20
Variance Detects	0.689	Percent Non-Detects	91.99%
Mean Detects	1.375	SD Detects	0.83
Median Detects	1.2	CV Detects	0.604
Skewness Detects	1.356	Kurtosis Detects	1.319
Mean of Logged Detects	0.167	SD of Logged Detects	0.546
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.83	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Normal at 5% Significance Level	

Lilliefors Test Statistic	0.182	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.171	Standard Error of Mean	0.0996
SD	0.623	95% KM (BCA) UCL	1.345
95% KM (t) UCL	1.335	95% KM (Percentile Bootstrap) UCL	1.337
95% KM (z) UCL	1.335	95% KM Bootstrap t UCL	1.347
90% KM Chebyshev UCL	1.47	95% KM Chebyshev UCL	1.605
97.5% KM Chebyshev UCL	1.793	99% KM Chebyshev UCL	2.162
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.978	Anderson-Darling GOF Test	
5% A-D Critical Value	0.752	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.19	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.164	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.454	k star (bias corrected MLE)	3.12
Theta hat (MLE)	0.398	Theta star (bias corrected MLE)	0.441
nu hat (MLE)	200.3	nu star (bias corrected)	181
MLE Mean (bias corrected)	1.375	MLE Sd (bias corrected)	0.779
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.536	nu hat (KM)	2560
Approximate Chi Square Value (N/A, α)	2444	Adjusted Chi Square Value (N/A, β)	2443
95% Gamma Approximate KM-UCL (use when n>=50)	1.227	95% Gamma Adjusted KM-UCL (use when n<50)	1.227
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.176	Mean	1.169
Maximum	3.61	Median	1.068
SD	0.595	CV	0.509
k hat (MLE)	3.985	k star (bias corrected MLE)	3.954
Theta hat (MLE)	0.293	Theta star (bias corrected MLE)	0.296
nu hat (MLE)	2885	nu star (bias corrected)	2863
MLE Mean (bias corrected)	1.169	MLE Sd (bias corrected)	0.588
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2740	Adjusted Chi Square Value (N/A, β)	2739
95% Gamma Approximate UCL (use when n>=50)	1.222	95% Gamma Adjusted UCL (use when n<50)	1.222
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.909	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.192	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.154	Mean in Log Scale	0.041
SD in Original Scale	0.549	SD in Log Scale	0.451
95% t UCL (assumes normality of ROS data)	1.202	95% Percentile Bootstrap UCL	1.206
95% BCA Bootstrap UCL	1.205	95% Bootstrap t UCL	1.203
95% H-UCL (Log ROS)	1.203		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.102	Mean in Log Scale	0.593
SD in Original Scale	1.732	SD in Log Scale	0.465
95% t UCL (Assumes normality)	2.252	95% H-Stat UCL	2.105
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.335	95% KM (% Bootstrap) UCL	1.337

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals (ug/l)***silicon***7440-21-3***ug/l***t)

General Statistics		
Total Number of Observations	27	Number of Distinct Observations 25
		Number of Missing Observations 0
Minimum	795	Mean 1482
Maximum	5840	Median 1260
SD	944.3	Std. Error of Mean 181.7
Coefficient of Variation	0.637	Skewness 4.051
Normal GOF Test		
Shapiro Wilk Test Statistic	0.535	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.286	Lilliefors GOF Test
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	1792	95% Adjusted-CLT UCL (Chen-1995) 1932
		95% Modified-t UCL (Johnson-1978) 1816
Gamma GOF Test		
A-D Test Statistic	1.937	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.747	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.216	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.169	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	5.223	k star (bias corrected MLE) 4.667
Theta hat (MLE)	283.7	Theta star (bias corrected MLE) 317.5
nu hat (MLE)	282	nu star (bias corrected) 252
MLE Mean (bias corrected)	1482	MLE Sd (bias corrected) 686
		Approximate Chi Square Value (0.05) 216.3
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value 214.2
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	1727	95% Adjusted Gamma UCL (use when n<50) 1744
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.826	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.172	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.171	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	6.678	Mean of logged Data 7.202
Maximum of Logged Data	8.672	SD of logged Data 0.393
Assuming Lognormal Distribution		
95% H-UCL	1677	90% Chebyshev (MVUE) UCL 1783
95% Chebyshev (MVUE) UCL	1935	97.5% Chebyshev (MVUE) UCL 2147
99% Chebyshev (MVUE) UCL	2563	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	1781	95% Jackknife UCL 1792
95% Standard Bootstrap UCL	1772	95% Bootstrap-t UCL 2215
95% Hall's Bootstrap UCL	2943	95% Percentile Bootstrap UCL 1796
95% BCA Bootstrap UCL	2019	
90% Chebyshev(Mean, Sd) UCL	2027	95% Chebyshev(Mean, Sd) UCL 2274
97.5% Chebyshev(Mean, Sd) UCL	2617	99% Chebyshev(Mean, Sd) UCL 3290
Suggested UCL to Use		
95% Student's-t UCL	1792	or 95% Modified-t UCL 1816

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (metals (ug/l))***sodium***7440-23-5***ug/l****t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 194
		Number of Missing Observations 0

Minimum	2600000	Mean	6835304
Maximum	9650000	Median	6920000
SD	782281	Std. Error of Mean	41116
Coefficient of Variation	0.114	Skewness	-1.325
Normal GOF Test			
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.112	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	6903107	95% Adjusted-CLT UCL (Chen-1995)	6899874
		95% Modified-t UCL (Johnson-1978)	6902630
Gamma GOF Test			
A-D Test Statistic	12.13	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.132	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	64.81	k star (bias corrected MLE)	64.27
Theta hat (MLE)	105472	Theta star (bias corrected MLE)	106351
nu hat (MLE)	46920	nu star (bias corrected)	46533
MLE Mean (bias corrected)	6835304	MLE Sd (bias corrected)	852607
		Approximate Chi Square Value (0.05)	46032
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	46030
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	6909646	95% Adjusted Gamma UCL (use when n<50)	6909939
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.821	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.144	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	14.77	Mean of logged Data	15.73
Maximum of Logged Data	16.08	SD of logged Data	0.131
Assuming Lognormal Distribution			
95% H-UCL	6920295	90% Chebyshev (MVUE) UCL	6983066
95% Chebyshev (MVUE) UCL	7047402	97.5% Chebyshev (MVUE) UCL	7136698
99% Chebyshev (MVUE) UCL	7312104		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	6902933	95% Jackknife UCL	6903107
95% Standard Bootstrap UCL	6902686	95% Bootstrap-t UCL	6900096
95% Hall's Bootstrap UCL	6901784	95% Percentile Bootstrap UCL	6903867
95% BCA Bootstrap UCL	6900442		
90% Chebyshev(Mean, Sd) UCL	6958651	95% Chebyshev(Mean, Sd) UCL	7014523
97.5% Chebyshev(Mean, Sd) UCL	7092072	99% Chebyshev(Mean, Sd) UCL	7244400
Suggested UCL to Use			
95% Student's-t UCL	6903107	or 95% Modified-t UCL	6902630
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE (metals (ug/l)***thallium***7440-28-0***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	23
Number of Detects	18	Number of Non-Detects	344
Number of Distinct Detects	15	Number of Distinct Non-Detects	8
Minimum Detect	0.3	Minimum Non-Detect	0.2

Maximum Detect	27.8	Maximum Non-Detect	100
Variance Detects	91.35	Percent Non-Detects	95.03%
Mean Detects	12.38	SD Detects	9.557
Median Detects	8.8	CV Detects	0.772
Skewness Detects	0.419	Kurtosis Detects	-1.254
Mean of Logged Detects	1.997	SD of Logged Detects	1.321
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.893	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.234	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.235	Standard Error of Mean	0.266
SD	3.795	95% KM (BCA) UCL	1.714
95% KM (t) UCL	1.673	95% KM (Percentile Bootstrap) UCL	1.659
95% KM (z) UCL	1.672	95% KM Bootstrap t UCL	1.786
90% KM Chebyshev UCL	2.032	95% KM Chebyshev UCL	2.394
97.5% KM Chebyshev UCL	2.895	99% KM Chebyshev UCL	3.88
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.607	Anderson-Darling GOF Test	
5% A-D Critical Value	0.765	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.201	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.209	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.099	k star (bias corrected MLE)	0.953
Theta hat (MLE)	11.27	Theta star (bias corrected MLE)	12.99
nu hat (MLE)	39.57	nu star (bias corrected)	34.31
MLE Mean (bias corrected)	12.38	MLE Sd (bias corrected)	12.68
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.106	nu hat (KM)	76.66
Approximate Chi Square Value (76.66, α)	57.49	Adjusted Chi Square Value (76.66, β)	57.43
95% Gamma Approximate KM-UCL (use when n>=50)	1.646	95% Gamma Adjusted KM-UCL (use when n<50)	1.648
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.063
Maximum	27.8	Median	0.01
SD	3.696	CV	3.477
k hat (MLE)	0.198	k star (bias corrected MLE)	0.198
Theta hat (MLE)	5.365	Theta star (bias corrected MLE)	5.359
nu hat (MLE)	143.5	nu star (bias corrected)	143.6
MLE Mean (bias corrected)	1.063	MLE Sd (bias corrected)	2.387
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (143.63, α)	116.9	Adjusted Chi Square Value (143.63, β)	116.8
95% Gamma Approximate UCL (use when n>=50)	1.306	95% Gamma Adjusted UCL (use when n<50)	1.307
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.853	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.262	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.083	Mean in Log Scale	-2.02
SD in Original Scale	3.469	SD in Log Scale	2.121
95% t UCL (assumes normality of ROS data)	1.384	95% Percentile Bootstrap UCL	1.397
95% BCA Bootstrap UCL	1.447	95% Bootstrap t UCL	1.457
95% H-UCL (Log ROS)	1.803		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.707	Mean in Log Scale	1.306
SD in Original Scale	9.595	SD in Log Scale	1.307
95% t UCL (Assumes normality)	8.538	95% H-Stat UCL	10.22
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			

Suggested UCL to Use		
95% KM (t) UCL	1.673 95% GROS Approximate Gamma UCL	1.306
95% Approximate Gamma KM-UCL	1.646	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals (ug/l)***tin***7440-31-5***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 28
Number of Detects	34	Number of Non-Detects 328
Number of Distinct Detects	22	Number of Distinct Non-Detects 6
Minimum Detect	0.7	Minimum Non-Detect 2.5
Maximum Detect	15.4	Maximum Non-Detect 100
Variance Detects	10.05	Percent Non-Detects 90.61%
Mean Detects	2.585	SD Detects 3.17
Median Detects	1.35	CV Detects 1.226
Skewness Detects	2.831	Kurtosis Detects 8.608
Mean of Logged Detects	0.543	SD of Logged Detects 0.807
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.605	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.933	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.304	Lilliefors GOF Test
5% Lilliefors Critical Value	0.152	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1.531	Standard Error of Mean 0.134
SD	1.432	95% KM (BCA) UCL 1.777
95% KM (t) UCL	1.751	95% KM (Percentile Bootstrap) UCL 1.76
95% KM (z) UCL	1.751	95% KM Bootstrap t UCL 1.807
90% KM Chebyshev UCL	1.932	95% KM Chebyshev UCL 2.114
97.5% KM Chebyshev UCL	2.366	99% KM Chebyshev UCL 2.862
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.767	Anderson-Darling GOF Test
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.248	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.154	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.372	k star (bias corrected MLE) 1.271
Theta hat (MLE)	1.884	Theta star (bias corrected MLE) 2.034
nu hat (MLE)	93.32	nu star (bias corrected) 86.42
MLE Mean (bias corrected)	2.585	MLE Sd (bias corrected) 2.293
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.142	nu hat (KM) 827.2
Approximate Chi Square Value (827.16, α)	761.4	Adjusted Chi Square Value (827.16, β) 761.2
95% Gamma Approximate KM-UCL (use when n>=50)	1.663	95% Gamma Adjusted KM-UCL (use when n<50) 1.663
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 1.611
Maximum	15.4	Median 1.11
SD	1.791	CV 1.111
k hat (MLE)	0.592	k star (bias corrected MLE) 0.589
Theta hat (MLE)	2.72	Theta star (bias corrected MLE) 2.734
nu hat (MLE)	429	nu star (bias corrected) 426.7
MLE Mean (bias corrected)	1.611	MLE Sd (bias corrected) 2.099
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (426.74, α)	379.9	Adjusted Chi Square Value (426.74, β) 379.7
95% Gamma Approximate UCL (use when n>=50)	1.81	95% Gamma Adjusted UCL (use when n<50) 1.811
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.86	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.933	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.185	Lilliefors GOF Test
5% Lilliefors Critical Value	0.152	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		

Mean in Original Scale	1.652	Mean in Log Scale	0.296
SD in Original Scale	1.346	SD in Log Scale	0.62
95% t UCL (assumes normality of ROS data)	1.768	95% Percentile Bootstrap UCL	1.765
95% BCA Bootstrap UCL	1.78	95% Bootstrap t UCL	1.792
95% H-UCL (Log ROS)	1.732		

DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	7.823	Mean in Log Scale	1.407
SD in Original Scale	10.61	SD in Log Scale	1.086
95% t UCL (Assumes normality)	8.743	95% H-Stat UCL	8.351
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	1.751	95% KM (% Bootstrap) UCL	1.76

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals (ug/l)***vanadium***7440-62-2***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	48
Number of Detects	167	Number of Non-Detects	195
Number of Distinct Detects	43	Number of Distinct Non-Detects	6
Minimum Detect	1	Minimum Non-Detect	5
Maximum Detect	13.9	Maximum Non-Detect	250
Variance Detects	4.064	Percent Non-Detects	53.87%
Mean Detects	2.568	SD Detects	2.016
Median Detects	2	CV Detects	0.785
Skewness Detects	3.282	Kurtosis Detects	12.61
Mean of Logged Detects	0.775	SD of Logged Detects	0.518

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.622	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.274	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0686	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.518	Standard Error of Mean	0.143
SD	1.925	95% KM (BCA) UCL	2.75
95% KM (t) UCL	2.754	95% KM (Percentile Bootstrap) UCL	2.769
95% KM (z) UCL	2.753	95% KM Bootstrap t UCL	2.805
90% KM Chebyshev UCL	2.947	95% KM Chebyshev UCL	3.141
97.5% KM Chebyshev UCL	3.411	99% KM Chebyshev UCL	3.94

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.752	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.187	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0726	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	3.136	k star (bias corrected MLE)	3.084
Theta hat (MLE)	0.819	Theta star (bias corrected MLE)	0.833
nu hat (MLE)	1047	nu star (bias corrected)	1030
MLE Mean (bias corrected)	2.568	MLE Sd (bias corrected)	1.462

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.711	nu hat (KM)	1239
Approximate Chi Square Value (N/A, α)	1158	Adjusted Chi Square Value (N/A, β)	1158
95% Gamma Approximate KM-UCL (use when n>=50)	2.694	95% Gamma Adjusted KM-UCL (use when n<50)	2.695

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	2.517
Maximum	13.9	Median	2.1
SD	1.815	CV	0.721
k hat (MLE)	2.175	k star (bias corrected MLE)	2.158

Theta hat (MLE)	1.158	Theta star (bias corrected MLE)	1.166
nu hat (MLE)	1574	nu star (bias corrected)	1563
MLE Mean (bias corrected)	2.517	MLE Sd (bias corrected)	1.713
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1472	Adjusted Chi Square Value (N/A, β)	1471
95% Gamma Approximate UCL (use when n>=50)	2.673	95% Gamma Adjusted UCL (use when n<50)	2.673
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.133	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0686	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.464	Mean in Log Scale	0.767
SD in Original Scale	1.6	SD in Log Scale	0.487
95% t UCL (assumes normality of ROS data)	2.602	95% Percentile Bootstrap UCL	2.603
95% BCA Bootstrap UCL	2.632	95% Bootstrap t UCL	2.628
95% H-UCL (Log ROS)	2.538		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	37.07	Mean in Log Scale	2.334
SD in Original Scale	50.32	SD in Log Scale	1.734
95% t UCL (Assumes normality)	41.43	95% H-Stat UCL	60.11
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	2.754	95% KM (% Bootstrap) UCL	2.769
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals (ug/l)***zinc***7440-66-6***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	71
Number of Detects	88	Number of Non-Detects	274
Number of Distinct Detects	68	Number of Distinct Non-Detects	3
Minimum Detect	7.4	Minimum Non-Detect	50
Maximum Detect	62	Maximum Non-Detect	500
Variance Detects	67.28	Percent Non-Detects	75.69%
Mean Detects	18.6	SD Detects	8.203
Median Detects	15.8	CV Detects	0.441
Skewness Detects	2.384	Kurtosis Detects	8.651
Mean of Logged Detects	2.851	SD of Logged Detects	0.365
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.809	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	1.11E-16	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.17	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0944	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	18.58	Standard Error of Mean	0.865
SD	8.114	95% KM (BCA) UCL	20.02
95% KM (t) UCL	20.01	95% KM (Percentile Bootstrap) UCL	20.12
95% KM (z) UCL	20.01	95% KM Bootstrap t UCL	20.35
90% KM Chebyshev UCL	21.18	95% KM Chebyshev UCL	22.36
97.5% KM Chebyshev UCL	23.99	99% KM Chebyshev UCL	27.2
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.125	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.134	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0954	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	7.062	k star (bias corrected MLE)	6.829
Theta hat (MLE)	2.634	Theta star (bias corrected MLE)	2.724
nu hat (MLE)	1243	nu star (bias corrected)	1202
MLE Mean (bias corrected)	18.6	MLE Sd (bias corrected)	7.118
Gamma Kaplan-Meier (KM) Statistics			

k hat (KM)	5.247	nu hat (KM)	3799
Approximate Chi Square Value (N/A, α)	3656	Adjusted Chi Square Value (N/A, β)	3656
95% Gamma Approximate KM-UCL (use when n>=50)	19.31	95% Gamma Adjusted KM-UCL (use when n<50)	19.31
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	3.839	Mean	18.58
Maximum	62	Median	17.2
SD	7.798	CV	0.42
k hat (MLE)	5.938	k star (bias corrected MLE)	5.891
Theta hat (MLE)	3.129	Theta star (bias corrected MLE)	3.154
nu hat (MLE)	4299	nu star (bias corrected)	4265
MLE Mean (bias corrected)	18.58	MLE Sd (bias corrected)	7.655
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	4114	Adjusted Chi Square Value (N/A, β)	4113
95% Gamma Approximate UCL (use when n>=50)	19.26	95% Gamma Adjusted UCL (use when n<50)	19.26
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.11	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0944	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	18.45	Mean in Log Scale	2.85
SD in Original Scale	7.074	SD in Log Scale	0.358
95% t UCL (assumes normality of ROS data)	19.06	95% Percentile Bootstrap UCL	19.08
95% BCA Bootstrap UCL	19.07	95% Bootstrap t UCL	19.09
95% H-UCL (Log ROS)	19.04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	97.96	Mean in Log Scale	4.097
SD in Original Scale	95.64	SD in Log Scale	1
95% t UCL (Assumes normality)	106.3	95% H-Stat UCL	111
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	20.01	95% KM (% Bootstrap) UCL	20.12
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals, dissolved (ug/l)***aluminum***7429-90-5***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	29
Number of Detects	38	Number of Non-Detects	324
Number of Distinct Detects	25	Number of Distinct Non-Detects	5
Minimum Detect	4	Minimum Non-Detect	70
Maximum Detect	280	Maximum Non-Detect	700
Variance Detects	2102	Percent Non-Detects	89.50%
Mean Detects	34.82	SD Detects	45.84
Median Detects	26	CV Detects	1.317
Skewness Detects	4.393	Kurtosis Detects	22.97
Mean of Logged Detects	3.082	SD of Logged Detects	0.981
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.545	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.29	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	27.43	Standard Error of Mean	3.052
SD	23.7	95% KM (BCA) UCL	32.35
95% KM (t) UCL	32.46	95% KM (Percentile Bootstrap) UCL	32.73
95% KM (z) UCL	32.45	95% KM Bootstrap t UCL	33
90% KM Chebyshev UCL	36.58	95% KM Chebyshev UCL	40.73
97.5% KM Chebyshev UCL	46.49	99% KM Chebyshev UCL	57.8
Gamma GOF Tests on Detected Observations Only			

A-D Test Statistic	1.153	Anderson-Darling GOF Test	
5% A-D Critical Value	0.773	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.154	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.147	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.209	k star (bias corrected MLE)	1.131
Theta hat (MLE)	28.8	Theta star (bias corrected MLE)	30.79
nu hat (MLE)	91.86	nu star (bias corrected)	85.95
MLE Mean (bias corrected)	34.82	MLE Sd (bias corrected)	32.74
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.339	nu hat (KM)	969.6
Approximate Chi Square Value (969.62, α)	898.3	Adjusted Chi Square Value (969.62, β)	#####
95% Gamma Approximate KM-UCL (use when n>=50)	29.6	95% Gamma Adjusted KM-UCL (use when n<50)	29.61
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	28.76
Maximum	280	Median	21.13
SD	29.35	CV	1.02
k hat (MLE)	0.647	k star (bias corrected MLE)	0.644
Theta hat (MLE)	44.43	Theta star (bias corrected MLE)	44.67
nu hat (MLE)	468.6	nu star (bias corrected)	466.1
MLE Mean (bias corrected)	28.76	MLE Sd (bias corrected)	35.84
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (466.09, α)	417	Adjusted Chi Square Value (466.09, β)	416.9
95% Gamma Approximate UCL (use when n>=50)	32.14	95% Gamma Adjusted UCL (use when n<50)	32.16
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.917	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.169	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	27.33	Mean in Log Scale	2.971
SD in Original Scale	26.18	SD in Log Scale	0.83
95% t UCL (assumes normality of ROS data)	29.6	95% Percentile Bootstrap UCL	29.64
95% BCA Bootstrap UCL	29.91	95% Bootstrap t UCL	29.93
95% H-UCL (Log ROS)	30.05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	109.4	Mean in Log Scale	4.311
SD in Original Scale	98.03	SD in Log Scale	0.892
95% t UCL (Assumes normality)	117.9	95% H-Stat UCL	122.1
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	32.46	95% KM (% Bootstrap) UCL	32.73
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals, dissolved (ug/l)***antimony***7440-36-0***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	80
Number of Detects	95	Number of Non-Detects	267
Number of Distinct Detects	63	Number of Distinct Non-Detects	32
Minimum Detect	0.8	Minimum Non-Detect	0.5
Maximum Detect	60.5	Maximum Non-Detect	100
Variance Detects	134	Percent Non-Detects	73.76%
Mean Detects	7.9	SD Detects	11.58
Median Detects	4.3	CV Detects	1.465
Skewness Detects	3.165	Kurtosis Detects	10.34
Mean of Logged Detects	1.474	SD of Logged Detects	1.019
Normal GOF Test on Detects Only			

Shapiro Wilk Test Statistic	0.573	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.27	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0909	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.855	Standard Error of Mean	0.414
SD	6.998	95% KM (BCA) UCL	4.587
95% KM (t) UCL	4.538	95% KM (Percentile Bootstrap) UCL	4.545
95% KM (z) UCL	4.536	95% KM Bootstrap t UCL	4.679
90% KM Chebyshev UCL	5.098	95% KM Chebyshev UCL	5.661
97.5% KM Chebyshev UCL	6.442	99% KM Chebyshev UCL	7.977
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.544	Anderson-Darling GOF Test	
5% A-D Critical Value	0.784	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.13	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0947	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.977	k star (bias corrected MLE)	0.953
Theta hat (MLE)	8.089	Theta star (bias corrected MLE)	8.291
nu hat (MLE)	185.6	nu star (bias corrected)	181
MLE Mean (bias corrected)	7.9	MLE Sd (bias corrected)	8.093
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.304	nu hat (KM)	219.7
Approximate Chi Square Value (219.74, α)	186.4	Adjusted Chi Square Value (219.74, β)	186.3
95% Gamma Approximate KM-UCL (use when n>=50)	4.544	95% Gamma Adjusted KM-UCL (use when n<50)	4.547
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.492
Maximum	60.5	Median	0.576
SD	7.298	CV	2.09
k hat (MLE)	0.256	k star (bias corrected MLE)	0.256
Theta hat (MLE)	13.64	Theta star (bias corrected MLE)	13.66
nu hat (MLE)	185.4	nu star (bias corrected)	185.2
MLE Mean (bias corrected)	3.492	MLE Sd (bias corrected)	6.906
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (185.16, α)	154.7	Adjusted Chi Square Value (185.16, β)	154.6
95% Gamma Approximate UCL (use when n>=50)	4.18	95% Gamma Adjusted UCL (use when n<50)	4.183
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0983	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0909	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.744	Mean in Log Scale	0.648
SD in Original Scale	6.759	SD in Log Scale	1.103
95% t UCL (assumes normality of ROS data)	4.329	95% Percentile Bootstrap UCL	4.334
95% BCA Bootstrap UCL	4.466	95% Bootstrap t UCL	4.495
95% H-UCL (Log ROS)	3.992		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	10.79	Mean in Log Scale	1.718
SD in Original Scale	12.97	SD in Log Scale	1.218
95% t UCL (Assumes normality)	11.91	95% H-Stat UCL	13.58
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	4.587		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals, dissolved (ug/l)***arsenic***7440-38-2***ug/l***d)

General Statistics			
Total Number of Observations	359	Number of Distinct Observations	138
Number of Detects	325	Number of Non-Detects	34
Number of Distinct Detects	129	Number of Distinct Non-Detects	14
Minimum Detect	0.29	Minimum Non-Detect	1
Maximum Detect	5.9	Maximum Non-Detect	13
Variance Detects	0.353	Percent Non-Detects	9.47%
Mean Detects	1.154	SD Detects	0.594
Median Detects	1.04	CV Detects	0.515
Skewness Detects	4.094	Kurtosis Detects	24.04
Mean of Logged Detects	0.0607	SD of Logged Detects	0.383
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.672	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0491	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.137	Standard Error of Mean	0.0315
SD	0.582	95% KM (BCA) UCL	1.189
95% KM (t) UCL	1.189	95% KM (Percentile Bootstrap) UCL	1.191
95% KM (z) UCL	1.189	95% KM Bootstrap t UCL	1.198
90% KM Chebyshev UCL	1.231	95% KM Chebyshev UCL	1.274
97.5% KM Chebyshev UCL	1.334	99% KM Chebyshev UCL	1.45
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.468	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.121	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0505	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.236	k star (bias corrected MLE)	6.181
Theta hat (MLE)	0.185	Theta star (bias corrected MLE)	0.187
nu hat (MLE)	4053	nu star (bias corrected)	4017
MLE Mean (bias corrected)	1.154	MLE Sd (bias corrected)	0.464
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.81	nu hat (KM)	2735
Approximate Chi Square Value (N/A, α)	2615	Adjusted Chi Square Value (N/A, β)	2614
95% Gamma Approximate KM-UCL (use when n>=50)	1.189	95% Gamma Adjusted KM-UCL (use when n<50)	1.189
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.29	Mean	1.13
Maximum	5.9	Median	1.04
SD	0.575	CV	0.509
k hat (MLE)	6.302	k star (bias corrected MLE)	6.252
Theta hat (MLE)	0.179	Theta star (bias corrected MLE)	0.181
nu hat (MLE)	4525	nu star (bias corrected)	4489
MLE Mean (bias corrected)	1.13	MLE Sd (bias corrected)	0.452
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	4334	Adjusted Chi Square Value (N/A, β)	4333
95% Gamma Approximate UCL (use when n>=50)	1.17	95% Gamma Adjusted UCL (use when n<50)	1.171
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0911	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0491	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.132	Mean in Log Scale	0.0454
SD in Original Scale	0.572	SD in Log Scale	0.374
95% t UCL (assumes normality of ROS data)	1.182	95% Percentile Bootstrap UCL	1.185
95% BCA Bootstrap UCL	1.191	95% Bootstrap t UCL	1.192
95% H-UCL (Log ROS)	1.161		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.304	Mean in Log Scale	0.0938
SD in Original Scale	1.069	SD in Log Scale	0.518
95% t UCL (Assumes normality)	1.397	95% H-Stat UCL	1.32
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL1.189

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals, dissolved (ug/l)***barium***7440-39-3***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	159
Number of Detects	360	Number of Non-Detects	2
Number of Distinct Detects	159	Number of Distinct Non-Detects	1
Minimum Detect	7.4	Minimum Non-Detect	25
Maximum Detect	64.4	Maximum Non-Detect	25
Variance Detects	36.02	Percent Non-Detects	0.55%
Mean Detects	19.78	SD Detects	6.001
Median Detects	18.8	CV Detects	0.303
Skewness Detects	1.988	Kurtosis Detects	9.828
Mean of Logged Detects	2.945	SD of Logged Detects	0.28

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.899	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0856	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	19.77	Standard Error of Mean	0.315
SD	5.984	95% KM (BCA) UCL	20.28
95% KM (t) UCL	20.29	95% KM (Percentile Bootstrap) UCL	20.29
95% KM (z) UCL	20.29	95% KM Bootstrap t UCL	20.32
90% KM Chebyshev UCL	20.72	95% KM Chebyshev UCL	21.14
97.5% KM Chebyshev UCL	21.74	99% KM Chebyshev UCL	22.91

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.68	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0464	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0479	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	12.64	k star (bias corrected MLE)	12.54
Theta hat (MLE)	1.564	Theta star (bias corrected MLE)	1.577
nu hat (MLE)	9104	nu star (bias corrected)	9030
MLE Mean (bias corrected)	19.78	MLE Sd (bias corrected)	5.585

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	10.91	nu hat (KM)	7902
Approximate Chi Square Value (N/A, α)	7697	Adjusted Chi Square Value (N/A, β)	7696
95% Gamma Approximate KM-UCL (use when n>=50)	20.3	95% Gamma Adjusted KM-UCL (use when n<50)	20.3

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.4	Mean	19.77
Maximum	64.4	Median	18.8
SD	5.988	CV	0.303
k hat (MLE)	12.7	k star (bias corrected MLE)	12.59
Theta hat (MLE)	1.557	Theta star (bias corrected MLE)	1.57
nu hat (MLE)	9192	nu star (bias corrected)	9118
MLE Mean (bias corrected)	19.77	MLE Sd (bias corrected)	5.571
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	8897	Adjusted Chi Square Value (N/A, β)	8896
95% Gamma Approximate UCL (use when n>=50)	20.26	95% Gamma Adjusted UCL (use when n<50)	20.26

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0374	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	19.77	Mean in Log Scale	2.944
SD in Original Scale	5.988	SD in Log Scale	0.279
95% t UCL (assumes normality of ROS data)	20.29	95% Percentile Bootstrap UCL	20.28
95% BCA Bootstrap UCL	20.34	95% Bootstrap t UCL	20.34
95% H-UCL (Log ROS)	20.25		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	2.944	95% H-UCL (KM -Log)	20.25
KM SD (logged)	0.279	95% Critical H Value (KM-Log)	1.705
KM Standard Error of Mean (logged)	0.0147		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	19.74	Mean in Log Scale	2.942
SD in Original Scale	6.009	SD in Log Scale	0.281
95% t UCL (Assumes normality)	20.26	95% H-Stat UCL	20.23
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (BCA) UCL	20.28	95% GROS Approximate Gamma UCL	20.26
95% Approximate Gamma KM-UCL	20.3		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals, dissolved (ug/l)***cadmium***7440-43-9***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	6
Number of Detects	8	Number of Non-Detects	354
Number of Distinct Detects	2	Number of Distinct Non-Detects	4
Minimum Detect	0.1	Minimum Non-Detect	0.5
Maximum Detect	2.5	Maximum Non-Detect	25
Variance Detects	0.72	Percent Non-Detects	97.79%
Mean Detects	0.4	SD Detects	0.849
Median Detects	0.1	CV Detects	2.121
Skewness Detects	2.828	Kurtosis Detects	8
Mean of Logged Detects	-1.9	SD of Logged Detects	1.138

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.419	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.513	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.26	Standard Error of Mean	0.165
SD	0.599	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.533	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.532	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.756	95% KM Chebyshev UCL	0.98
97.5% KM Chebyshev UCL	1.292	99% KM Chebyshev UCL	1.904

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.567	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.545	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.307	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.624	k star (bias corrected MLE)	0.474
Theta hat (MLE)	0.641	Theta star (bias corrected MLE)	0.845
nu hat (MLE)	9.989	nu star (bias corrected)	7.577
MLE Mean (bias corrected)	0.4	MLE Sd (bias corrected)	0.581

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.189	nu hat (KM)	136.6
Approximate Chi Square Value (136.56, α)	110.6	Adjusted Chi Square Value (136.56, β)	110.5
95% Gamma Approximate KM-UCL (use when n>=50)	0.321	95% Gamma Adjusted KM-UCL (use when n<50)	0.321

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	0.394
Maximum	3.88 Median	0.0999
SD	0.624 CV	1.586
k hat (MLE)	0.417 k star (bias corrected MLE)	0.415
Theta hat (MLE)	0.945 Theta star (bias corrected MLE)	0.949
nu hat (MLE)	301.6 nu star (bias corrected)	300.5
MLE Mean (bias corrected)	0.394 MLE Sd (bias corrected)	0.611
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (300.48, α)	261.3 Adjusted Chi Square Value (300.48, β)	261.2
95% Gamma Approximate UCL (use when $n \geq 50$)	0.453 95% Gamma Adjusted UCL (use when $n < 50$)	0.453
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.419 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818 Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.513 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.19 Mean in Log Scale	-2.014
SD in Original Scale	0.207 SD in Log Scale	0.824
95% t UCL (assumes normality of ROS data)	0.208 95% Percentile Bootstrap UCL	0.208
95% BCA Bootstrap UCL	0.21 95% Bootstrap t UCL	0.211
95% H-UCL (Log ROS)	0.204	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	4.993 Mean in Log Scale	1.236
SD in Original Scale	4.376 SD in Log Scale	0.93
95% t UCL (Assumes normality)	5.372 95% H-Stat UCL	5.874
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	N/A	
Warning: One or more Recommended UCL(s) not available!		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals, dissolved (ug/l)***calcium***7440-70-2***ug/l****d)		
General Statistics		
Total Number of Observations	362 Number of Distinct Observations	94
	Number of Missing Observations	0
Minimum	156000 Mean	252688
Maximum	352000 Median	256000
SD	25551 Std. Error of Mean	1343
Coefficient of Variation	0.101 Skewness	-0.911
Normal GOF Test		
Shapiro Wilk Test Statistic	0.933 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0998 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	254902 95% Adjusted-CLT UCL (Chen-1995)	254828
	95% Modified-t UCL (Johnson-1978)	254892
Gamma GOF Test		
A-D Test Statistic	8.554 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.117 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	89.57 k star (bias corrected MLE)	88.83
Theta hat (MLE)	2821 Theta star (bias corrected MLE)	2845
nu hat (MLE)	64847 nu star (bias corrected)	64311

MLE Mean (bias corrected)	252688	MLE Sd (bias corrected)	26811
		Approximate Chi Square Value (0.05)	63723
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	63720
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	255023	95% Adjusted Gamma UCL (use when n<50)	255032
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.884	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	11.96	Mean of logged Data	12.43
Maximum of Logged Data	12.77	SD of logged Data	0.109
Assuming Lognormal Distribution			
95% H-UCL	255184	90% Chebyshev (MVUE) UCL	257112
95% Chebyshev (MVUE) UCL	259081	97.5% Chebyshev (MVUE) UCL	261814
99% Chebyshev (MVUE) UCL	267182		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	254897	95% Jackknife UCL	254902
95% Standard Bootstrap UCL	254905	95% Bootstrap-t UCL	255020
95% Hall's Bootstrap UCL	254955	95% Percentile Bootstrap UCL	254917
95% BCA Bootstrap UCL	254820		
90% Chebyshev(Mean, Sd) UCL	256717	95% Chebyshev(Mean, Sd) UCL	258542
97.5% Chebyshev(Mean, Sd) UCL	261075	99% Chebyshev(Mean, Sd) UCL	266050
Suggested UCL to Use			
95% Student's-t UCL	254902	or 95% Modified-t UCL	254892
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE (metals, dissolved (ug/l)***chromium***7440-47-3***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	36
Number of Detects	58	Number of Non-Detects	304
Number of Distinct Detects	32	Number of Distinct Non-Detects	4
Minimum Detect	0.3	Minimum Non-Detect	0.6
Maximum Detect	6.5	Maximum Non-Detect	50
Variance Detects	3.288	Percent Non-Detects	83.98%
Mean Detects	2.728	SD Detects	1.813
Median Detects	2.15	CV Detects	0.665
Skewness Detects	0.22	Kurtosis Detects	-1.127
Mean of Logged Detects	0.654	SD of Logged Detects	0.977
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.912	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	2.69E-04	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.149	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.116	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.688	Standard Error of Mean	0.237
SD	1.808	95% KM (BCA) UCL	3.113
95% KM (t) UCL	3.079	95% KM (Percentile Bootstrap) UCL	3.084
95% KM (z) UCL	3.078	95% KM Bootstrap t UCL	3.076
90% KM Chebyshev UCL	3.4	95% KM Chebyshev UCL	3.723
97.5% KM Chebyshev UCL	4.171	99% KM Chebyshev UCL	5.05
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.249	Anderson-Darling GOF Test	
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.163	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.119	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.576	k star (bias corrected MLE) 1.506
Theta hat (MLE)	1.731	Theta star (bias corrected MLE) 1.811
nu hat (MLE)	182.8	nu star (bias corrected) 174.7
MLE Mean (bias corrected)	2.728	MLE Sd (bias corrected) 2.223
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.21	nu hat (KM) 1600
Approximate Chi Square Value (N/A, α)	1508	Adjusted Chi Square Value (N/A, β) 1508
95% Gamma Approximate KM-UCL (use when n>=50)	2.852	95% Gamma Adjusted KM-UCL (use when n<50) 2.852
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.3	Mean 2.713
Maximum	10.22	Median 2.239
SD	1.78	CV 0.656
k hat (MLE)	2.323	k star (bias corrected MLE) 2.306
Theta hat (MLE)	1.168	Theta star (bias corrected MLE) 1.176
nu hat (MLE)	1682	nu star (bias corrected) 1669
MLE Mean (bias corrected)	2.713	MLE Sd (bias corrected) 1.786
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1575	Adjusted Chi Square Value (N/A, β) 1575
95% Gamma Approximate UCL (use when n>=50)	2.874	95% Gamma Adjusted UCL (use when n<50) 2.875
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.184	Lilliefors GOF Test
5% Lilliefors Critical Value	0.116	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.843	Mean in Log Scale 0.635
SD in Original Scale	2.856	SD in Log Scale 0.935
95% t UCL (assumes normality of ROS data)	3.091	95% Percentile Bootstrap UCL 3.098
95% BCA Bootstrap UCL	3.102	95% Bootstrap t UCL 3.121
95% H-UCL (Log ROS)	3.236	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	9.899	Mean in Log Scale 1.884
SD in Original Scale	8.958	SD in Log Scale 0.96
95% t UCL (Assumes normality)	10.68	95% H-Stat UCL 11.61
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	3.079	95% KM (% Bootstrap) UCL 3.084
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals, dissolved (ug/l)***cobalt***7440-48-4***ug/l***d)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 8
Number of Detects	14	Number of Non-Detects 348
Number of Distinct Detects	3	Number of Distinct Non-Detects 5
Minimum Detect	0.2	Minimum Non-Detect 2
Maximum Detect	0.4	Maximum Non-Detect 40
Variance Detects	0.00533	Percent Non-Detects 96.13%
Mean Detects	0.293	SD Detects 0.073
Median Detects	0.3	CV Detects 0.249
Skewness Detects	0.113	Kurtosis Detects -0.856
Mean of Logged Detects	-1.258	SD of Logged Detects 0.258
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.822	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.253	Lilliefors GOF Test
5% Lilliefors Critical Value	0.237	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		

Mean	0.293	Standard Error of Mean	0.0195
SD	0.0703	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.325	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.325	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.351	95% KM Chebyshev UCL	0.378
97.5% KM Chebyshev UCL	0.415	99% KM Chebyshev UCL	0.487
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.221	Anderson-Darling GOF Test	
5% A-D Critical Value	0.734	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.286	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.228	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	16.77	k star (bias corrected MLE)	13.23
Theta hat (MLE)	0.0175	Theta star (bias corrected MLE)	0.0221
nu hat (MLE)	469.7	nu star (bias corrected)	370.4
MLE Mean (bias corrected)	0.293	MLE Sd (bias corrected)	0.0805
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	17.33	nu hat (KM)	12547
Approximate Chi Square Value (N/A, α)	12287	Adjusted Chi Square Value (N/A, β)	12286
95% Gamma Approximate KM-UCL (use when n>=50)	0.299	95% Gamma Adjusted KM-UCL (use when n<50)	0.299
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.131	Mean	0.294
Maximum	0.527	Median	0.29
SD	0.0745	CV	0.253
k hat (MLE)	15.49	k star (bias corrected MLE)	15.36
Theta hat (MLE)	0.019	Theta star (bias corrected MLE)	0.0191
nu hat (MLE)	11214	nu star (bias corrected)	11123
MLE Mean (bias corrected)	0.294	MLE Sd (bias corrected)	0.0751
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	10879	Adjusted Chi Square Value (N/A, β)	10878
95% Gamma Approximate UCL (use when n>=50)	0.301	95% Gamma Adjusted UCL (use when n<50)	0.301
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.811	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.298	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.294	Mean in Log Scale	-1.258
SD in Original Scale	0.0773	SD in Log Scale	0.261
95% t UCL (assumes normality of ROS data)	0.301	95% Percentile Bootstrap UCL	0.301
95% BCA Bootstrap UCL	0.301	95% Bootstrap t UCL	0.301
95% H-UCL (Log ROS)	0.301		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.678	Mean in Log Scale	1.235
SD in Original Scale	5.457	SD in Log Scale	1.052
95% t UCL (Assumes normality)	6.151	95% H-Stat UCL	6.741
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.325	95% KM (% Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals, dissolved (ug/l)***copper***7440-50-8***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	66
Number of Detects	167	Number of Non-Detects	195
Number of Distinct Detects	60	Number of Distinct Non-Detects	8

Minimum Detect	1	Minimum Non-Detect	0.5
Maximum Detect	157.7	Maximum Non-Detect	50
Variance Detects	149.2	Percent Non-Detects	53.87%
Mean Detects	3.989	SD Detects	12.21
Median Detects	2.1	CV Detects	3.062
Skewness Detects	12.16	Kurtosis Detects	153.7
Mean of Logged Detects	0.916	SD of Logged Detects	0.71
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.189	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0.00E+00	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.403	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0686	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.221	Standard Error of Mean	0.457
SD	8.432	95% KM (BCA) UCL	4.172
95% KM (t) UCL	3.973	95% KM (Percentile Bootstrap) UCL	4.087
95% KM (z) UCL	3.972	95% KM Bootstrap t UCL	5.19
90% KM Chebyshev UCL	4.59	95% KM Chebyshev UCL	5.211
97.5% KM Chebyshev UCL	6.072	99% KM Chebyshev UCL	7.763
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.99E+28	Anderson-Darling GOF Test	
5% A-D Critical Value	0.778	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.208	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.074	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.208	k star (bias corrected MLE)	1.19
Theta hat (MLE)	3.302	Theta star (bias corrected MLE)	3.351
nu hat (MLE)	403.5	nu star (bias corrected)	397.6
MLE Mean (bias corrected)	3.989	MLE Sd (bias corrected)	3.656
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.146	nu hat (KM)	105.6
Approximate Chi Square Value (105.64, α)	82.92	Adjusted Chi Square Value (105.64, β)	82.84
95% Gamma Approximate KM-UCL (use when n>=50)	4.103	95% Gamma Adjusted KM-UCL (use when n<50)	4.107
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.549
Maximum	157.7	Median	1.9
SD	8.894	CV	2.506
k hat (MLE)	0.442	k star (bias corrected MLE)	0.44
Theta hat (MLE)	8.036	Theta star (bias corrected MLE)	8.069
nu hat (MLE)	319.7	nu star (bias corrected)	318.4
MLE Mean (bias corrected)	3.549	MLE Sd (bias corrected)	5.351
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (318.41, α)	278.1	Adjusted Chi Square Value (318.41, β)	277.9
95% Gamma Approximate UCL (use when n>=50)	4.064	95% Gamma Adjusted UCL (use when n<50)	4.066
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.136	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0686	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.224	Mean in Log Scale	0.807
SD in Original Scale	8.414	SD in Log Scale	0.71
95% t UCL (assumes normality of ROS data)	3.953	95% Percentile Bootstrap UCL	4.067
95% BCA Bootstrap UCL	4.542	95% Bootstrap t UCL	5.536
95% H-UCL (Log ROS)	3.096		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8.423	Mean in Log Scale	1.542
SD in Original Scale	11.76	SD in Log Scale	1.069
95% t UCL (Assumes normality)	9.442	95% H-Stat UCL	9.366
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			

95% KM (t) UCL	3.973	95% KM (% Bootstrap) UCL	4.087
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals, dissolved (ug/l)***iron***7439-89-6***ug/l***d)

General Statistics			
Total Number of Observations	3.62E+02	Number of Distinct Observations	70
Number of Detects	71	Number of Non-Detects	291
Number of Distinct Detects	65	Number of Distinct Non-Detects	5
Minimum Detect	21	Minimum Non-Detect	50
Maximum Detect	583	Maximum Non-Detect	2500
Variance Detects	9949	Percent Non-Detects	80.39%
Mean Detects	160.9	SD Detects	99.74
Median Detects	147	CV Detects	0.62
Skewness Detects	1.676	Kurtosis Detects	4.647
Mean of Logged Detects	4.889	SD of Logged Detects	0.666
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.876	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	7.70E-08	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.146	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	136.2	Standard Error of Mean	9.818
SD	92.78	95% KM (BCA) UCL	152.8
95% KM (t) UCL	152.4	95% KM (Percentile Bootstrap) UCL	151.6
95% KM (z) UCL	152.4	95% KM Bootstrap t UCL	154
90% KM Chebyshev UCL	165.7	95% KM Chebyshev UCL	179
97.5% KM Chebyshev UCL	197.5	99% KM Chebyshev UCL	233.9
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.918	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.131	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.107	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.759	k star (bias corrected MLE)	2.651
Theta hat (MLE)	58.33	Theta star (bias corrected MLE)	60.69
nu hat (MLE)	391.7	nu star (bias corrected)	376.5
MLE Mean (bias corrected)	160.9	MLE Sd (bias corrected)	98.82
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.155	nu hat (KM)	1561
Approximate Chi Square Value (N/A, α)	1470	Adjusted Chi Square Value (N/A, β)	1469
95% Gamma Approximate KM-UCL (use when n>=50)	144.6	95% Gamma Adjusted KM-UCL (use when n<50)	144.7
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	136.7
Maximum	583	Median	122.5
SD	93.14	CV	0.681
k hat (MLE)	1.632	k star (bias corrected MLE)	1.62
Theta hat (MLE)	83.78	Theta star (bias corrected MLE)	84.38
nu hat (MLE)	1181	nu star (bias corrected)	1173
MLE Mean (bias corrected)	136.7	MLE Sd (bias corrected)	107.4
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1094	Adjusted Chi Square Value (N/A, β)	1094
95% Gamma Approximate UCL (use when n>=50)	146.5	95% Gamma Adjusted UCL (use when n<50)	146.5
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.172	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	137.9	Mean in Log Scale	4.693
SD in Original Scale	99.5	SD in Log Scale	0.697
95% t UCL (assumes normality of ROS data)	146.5	95% Percentile Bootstrap UCL	147.2
95% BCA Bootstrap UCL	147	95% Bootstrap t UCL	146.7

95% H-UCL (Log ROS)	149.3	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	477.5	Mean in Log Scale 5.726
SD in Original Scale	456.5	SD in Log Scale 0.967
95% t UCL (Assumes normality)	517.1	95% H-Stat UCL 544.8
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	152.4	95% KM (% Bootstrap) UCL 151.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals, dissolved (ug/l)***lead***7439-92-1***ug/l***d)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 18
Number of Detects	17	Number of Non-Detects 345
Number of Distinct Detects	14	Number of Distinct Non-Detects 5
Minimum Detect	0.2	Minimum Non-Detect 0.5
Maximum Detect	15.9	Maximum Non-Detect 50
Variance Detects	13.29	Percent Non-Detects 95.30%
Mean Detects	4.618	SD Detects 3.645
Median Detects	5	CV Detects 0.789
Skewness Detects	1.738	Kurtosis Detects 5.286
Mean of Logged Detects	1.103	SD of Logged Detects 1.172

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.821	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.892	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.216	Lilliefors GOF Test
5% Lilliefors Critical Value	0.215	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1.994	Standard Error of Mean 0.403
SD	2.408	95% KM (BCA) UCL 2.695
95% KM (t) UCL	2.659	95% KM (Percentile Bootstrap) UCL 2.671
95% KM (z) UCL	2.657	95% KM Bootstrap t UCL 2.783
90% KM Chebyshev UCL	3.203	95% KM Chebyshev UCL 3.751
97.5% KM Chebyshev UCL	4.512	99% KM Chebyshev UCL 6.006

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.901	Anderson-Darling GOF Test
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.222	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.214	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.314	k star (bias corrected MLE) 1.121
Theta hat (MLE)	3.515	Theta star (bias corrected MLE) 4.119
nu hat (MLE)	44.66	nu star (bias corrected) 38.11
MLE Mean (bias corrected)	4.618	MLE Sd (bias corrected) 4.361

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.685	nu hat (KM) 496.1
Approximate Chi Square Value (496.13, α)	445.5	Adjusted Chi Square Value (496.13, β) 445.3
95% Gamma Approximate KM-UCL (use when n>=50)	2.22	95% Gamma Adjusted KM-UCL (use when n<50) 2.221

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 2.157
Maximum	15.9	Median 1.397
SD	2.399	CV 1.112
k hat (MLE)	0.515	k star (bias corrected MLE) 0.513
Theta hat (MLE)	4.186	Theta star (bias corrected MLE) 4.206
nu hat (MLE)	373.1	nu star (bias corrected) 371.3
MLE Mean (bias corrected)	2.157	MLE Sd (bias corrected) 3.012
		Adjusted Level of Significance (β) 0.0493

Approximate Chi Square Value (371.32, α)	327.7	Adjusted Chi Square Value (371.32, β)	327.5
95% Gamma Approximate UCL (use when $n \geq 50$)	2.444	95% Gamma Adjusted UCL (use when $n < 50$)	2.446
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.829	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.892	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.259	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.215	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.979	Mean in Log Scale	0.0397
SD in Original Scale	2.62	SD in Log Scale	1.162
95% t UCL (assumes normality of ROS data)	2.206	95% Percentile Bootstrap UCL	2.205
95% BCA Bootstrap UCL	2.226	95% Bootstrap t UCL	2.238
95% H-UCL (Log ROS)	2.346		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.769	Mean in Log Scale	1.876
SD in Original Scale	8.873	SD in Log Scale	0.972
95% t UCL (Assumes normality)	10.54	95% H-Stat UCL	11.66
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	2.695		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals, dissolved (ug/l)***magnesium***7439-95-4***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	212
		Number of Missing Observations	0
Minimum	390000	Mean	803497
Maximum	1110000	Median	811500
SD	105320	Std. Error of Mean	5535
Coefficient of Variation	0.131	Skewness	-0.651
Normal GOF Test			
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.114	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	812626	95% Adjusted-CLT UCL (Chen-1995)	812400
		95% Modified-t UCL (Johnson-1978)	812594
Gamma GOF Test			
A-D Test Statistic	8.755	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.136	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	52.55	k star (bias corrected MLE)	52.12
Theta hat (MLE)	15289	Theta star (bias corrected MLE)	15416
nu hat (MLE)	38049	nu star (bias corrected)	37735
MLE Mean (bias corrected)	803497	MLE Sd (bias corrected)	111297
		Approximate Chi Square Value (0.05)	37284
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	37282
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when $n \geq 50$))	813211	95% Adjusted Gamma UCL (use when $n < 50$)	813249
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.148	Lilliefors Lognormal GOF Test	

5% Lilliefors Critical Value		0.0466 Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	12.87	Mean of logged Data	13.59
Maximum of Logged Data	13.92	SD of logged Data	0.143
Assuming Lognormal Distribution			
95% H-UCL	814203	90% Chebyshev (MVUE) UCL	822241
95% Chebyshev (MVUE) UCL	830493	97.5% Chebyshev (MVUE) UCL	841948
99% Chebyshev (MVUE) UCL	864448		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	812602	95% Jackknife UCL	812626
95% Standard Bootstrap UCL	812584	95% Bootstrap-t UCL	812877
95% Hall's Bootstrap UCL	812794	95% Percentile Bootstrap UCL	812108
95% BCA Bootstrap UCL	812392		
90% Chebyshev(Mean, Sd) UCL	820104	95% Chebyshev(Mean, Sd) UCL	827626
97.5% Chebyshev(Mean, Sd) UCL	838066	99% Chebyshev(Mean, Sd) UCL	858575
Suggested UCL to Use			
95% Student's-t UCL	812626	or 95% Modified-t UCL	812594
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE (metals, dissolved (ug/l)***manganese***7439-96-5***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	312
Number of Detects	361	Number of Non-Detects	1
Number of Distinct Detects	311	Number of Distinct Non-Detects	1
Minimum Detect	5.8	Minimum Non-Detect	25
Maximum Detect	311.4	Maximum Non-Detect	25
Variance Detects	1180	Percent Non-Detects	0.28%
Mean Detects	69.88	SD Detects	34.35
Median Detects	68.8	CV Detects	0.492
Skewness Detects	1.422	Kurtosis Detects	7.202
Mean of Logged Detects	4.106	SD of Logged Detects	0.591
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.936	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0695	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	69.73	Standard Error of Mean	1.809
SD	34.37	95% KM (BCA) UCL	72.9
95% KM (t) UCL	72.72	95% KM (Percentile Bootstrap) UCL	72.66
95% KM (z) UCL	72.71	95% KM Bootstrap t UCL	72.86
90% KM Chebyshev UCL	75.16	95% KM Chebyshev UCL	77.62
97.5% KM Chebyshev UCL	81.03	99% KM Chebyshev UCL	87.74
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.008	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0769	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0481	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.699	k star (bias corrected MLE)	3.671
Theta hat (MLE)	18.89	Theta star (bias corrected MLE)	19.04
nu hat (MLE)	2671	nu star (bias corrected)	2650
MLE Mean (bias corrected)	69.88	MLE Sd (bias corrected)	36.48
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	4.115	nu hat (KM)	2980
Approximate Chi Square Value (N/A, α)	2854	Adjusted Chi Square Value (N/A, β)	2853
95% Gamma Approximate KM-UCL (use when n>=50)	72.81	95% Gamma Adjusted KM-UCL (use when n<50)	72.82

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	5.8 Mean	69.76
Maximum	311.4 Median	68.5
SD	34.39 CV	0.493
k hat (MLE)	3.682 k star (bias corrected MLE)	3.654
Theta hat (MLE)	18.94 Theta star (bias corrected MLE)	19.09
nu hat (MLE)	2666 nu star (bias corrected)	2645
MLE Mean (bias corrected)	69.76 MLE Sd (bias corrected)	36.5
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2527 Adjusted Chi Square Value (N/A, β)	2526
95% Gamma Approximate UCL (use when n>=50)	73.03 95% Gamma Adjusted UCL (use when n<50)	73.04
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.112 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	69.75 Mean in Log Scale	4.103
SD in Original Scale	34.39 SD in Log Scale	0.592
95% t UCL (assumes normality of ROS data)	72.73 95% Percentile Bootstrap UCL	72.76
95% BCA Bootstrap UCL	72.82 95% Bootstrap t UCL	72.93
95% H-UCL (Log ROS)	76.37	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	69.72 Mean in Log Scale	4.101
SD in Original Scale	34.44 SD in Log Scale	0.596
95% t UCL (Assumes normality)	72.71 95% H-Stat UCL	76.44
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	7.29E+01	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals, dissolved (ug/l)***mercury***7439-97-6***ug/l***d)		
General Statistics		
Total Number of Observations	362 Number of Distinct Observations	111
Number of Detects	218 Number of Non-Detects	144
Number of Distinct Detects	96 Number of Distinct Non-Detects	45
Minimum Detect	1.60E-04 Minimum Non-Detect	3.20E-04
Maximum Detect	0.00507 Maximum Non-Detect	0.00131
Variance Detects	5.42E-07 Percent Non-Detects	39.78%
Mean Detects	6.61E-04 SD Detects	7.36E-04
Median Detects	4.00E-04 CV Detects	1.11E+00
Skewness Detects	3.37E+00 Kurtosis Detects	1.38E+01
Mean of Logged Detects	-7.65E+00 SD of Logged Detects	7.29E-01
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.612 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.249 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.06 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	5.18E-04 Standard Error of Mean	3.18E-05
SD	5.99E-04 95% KM (BCA) UCL	5.72E-04
95% KM (t) UCL	5.70E-04 95% KM (Percentile Bootstrap) UCL	5.71E-04
95% KM (z) UCL	5.70E-04 95% KM Bootstrap t UCL	5.81E-04
90% KM Chebyshev UCL	6.13E-04 95% KM Chebyshev UCL	6.57E-04
97.5% KM Chebyshev UCL	7.17E-04 99% KM Chebyshev UCL	8.35E-04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	10.76 Anderson-Darling GOF Test	
5% A-D Critical Value	0.77 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	1.78E-01 Kolmogrov-Smirnoff GOF	

5% K-S Critical Value	0.0626	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.665	k star (bias corrected MLE) 1.645
Theta hat (MLE)	3.97E-04	Theta star (bias corrected MLE) 4.02E-04
nu hat (MLE)	7.26E+02	nu star (bias corrected) 717.2
MLE Mean (bias corrected)	6.61E-04	MLE Sd (bias corrected) 5.16E-04
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.747	nu hat (KM) 540.8
Approximate Chi Square Value (540.78, α)	487.8	Adjusted Chi Square Value (540.78, β) 487.6
95% Gamma Approximate KM-UCL (use when n>=50)	5.74E-04	95% Gamma Adjusted KM-UCL (use when n<50) 5.74E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	1.60E-04	Mean 0.00438
Maximum	0.01	Median 9.60E-04
SD	0.00461	CV 1.054
k hat (MLE)	0.611	k star (bias corrected MLE) 0.608
Theta hat (MLE)	7.16E-03	Theta star (bias corrected MLE) 0.00719
nu hat (MLE)	4.43E+02	nu star (bias corrected) 440.4
MLE Mean (bias corrected)	4.38E-03	MLE Sd (bias corrected) 5.61E-03
		Adjusted Level of Significance (β) 4.93E-02
Approximate Chi Square Value (440.39, α)	3.93E+02	Adjusted Chi Square Value (440.39, β) 392.6
95% Gamma Approximate UCL (use when n>=50)	0.00491	95% Gamma Adjusted UCL (use when n<50) 0.00491
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	1.20E-01	Lilliefors GOF Test
5% Lilliefors Critical Value	6.00E-02	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	5.25E-04	Mean in Log Scale -7.833
SD in Original Scale	5.98E-04	SD in Log Scale 0.645
95% t UCL (assumes normality of ROS data)	5.77E-04	95% Percentile Bootstrap UCL 5.79E-04
95% BCA Bootstrap UCL	5.83E-04	95% Bootstrap t UCL 5.86E-04
95% H-UCL (Log ROS)	5.20E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	5.02E-04	Mean in Log Scale -7.905
SD in Original Scale	6.06E-04	SD in Log Scale 0.669
95% t UCL (Assumes normality)	5.55E-04	95% H-Stat UCL 4.93E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	5.72E-04	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals, dissolved (ug/l)***nickel***7440-02-0***ug/l****d)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 47
Number of Detects	169	Number of Non-Detects 193
Number of Distinct Detects	44	Number of Distinct Non-Detects 5
Minimum Detect	0.7	Minimum Non-Detect 1.4
Maximum Detect	120	Maximum Non-Detect 50
Variance Detects	96.18	Percent Non-Detects 53.31%
Mean Detects	3.483	SD Detects 9.807
Median Detects	1.7	CV Detects 2.816
Skewness Detects	10.3	Kurtosis Detects 120.2
Mean of Logged Detects	0.686	SD of Logged Detects 0.762
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.248	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.388	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0682	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.715	Standard Error of Mean	0.382
SD	6.942	95% KM (BCA) UCL	3.46
95% KM (t) UCL	3.345	95% KM (Percentile Bootstrap) UCL	3.412
95% KM (z) UCL	3.343	95% KM Bootstrap t UCL	3.973
90% KM Chebyshev UCL	3.86	95% KM Chebyshev UCL	4.379
97.5% KM Chebyshev UCL	5.099	99% KM Chebyshev UCL	6.514

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	23.09	Anderson-Darling GOF Test	
5% A-D Critical Value	0.783	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.313	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0737	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.024	k star (bias corrected MLE)	1.009
Theta hat (MLE)	3.402	Theta star (bias corrected MLE)	3.45
nu hat (MLE)	346	nu star (bias corrected)	341.2
MLE Mean (bias corrected)	3.483	MLE Sd (bias corrected)	3.466

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.153	nu hat (KM)	110.7
Approximate Chi Square Value (110.74, α)	87.45	Adjusted Chi Square Value (110.74, β)	87.37
95% Gamma Approximate KM-UCL (use when n>=50)	3.438	95% Gamma Adjusted KM-UCL (use when n<50)	3.441

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.068
Maximum	120	Median	1.6
SD	7.27	CV	2.369
k hat (MLE)	0.432	k star (bias corrected MLE)	0.43
Theta hat (MLE)	7.104	Theta star (bias corrected MLE)	7.133
nu hat (MLE)	312.7	nu star (bias corrected)	311.4
MLE Mean (bias corrected)	3.068	MLE Sd (bias corrected)	4.678
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (311.44, α)	271.6	Adjusted Chi Square Value (311.44, β)	271.4
95% Gamma Approximate UCL (use when n>=50)	3.519	95% Gamma Adjusted UCL (use when n<50)	3.521

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.206	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0682	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.735	Mean in Log Scale	0.623
SD in Original Scale	6.787	SD in Log Scale	0.673
95% t UCL (assumes normality of ROS data)	3.323	95% Percentile Bootstrap UCL	3.422
95% BCA Bootstrap UCL	3.854	95% Bootstrap t UCL	4.098
95% H-UCL (Log ROS)	2.502		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	6.312	Mean in Log Scale	1.289
SD in Original Scale	8.722	SD in Log Scale	1.008
95% t UCL (Assumes normality)	7.068	95% H-Stat UCL	6.75
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	3.345	95% KM (% Bootstrap) UCL	3.412

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (metals, dissolved (ug/l)***potassium***|7440-09-7***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	133
		Number of Missing Observations	0
Minimum	136000	Mean	246243

Maximum	471000	Median	240000
SD	48167	Std. Error of Mean	2532
Coefficient of Variation	0.196	Skewness	1.791
Normal GOF Test			
Shapiro Wilk Test Statistic	0.853	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.132	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	250418	95% Adjusted-CLT UCL (Chen-1995)	250662
		95% Modified-t UCL (Johnson-1978)	250458
Gamma GOF Test			
A-D Test Statistic	7.662	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.104	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	29.95	k star (bias corrected MLE)	29.7
Theta hat (MLE)	8223	Theta star (bias corrected MLE)	8291
nu hat (MLE)	21681	nu star (bias corrected)	21503
MLE Mean (bias corrected)	246243	MLE Sd (bias corrected)	45184
		Approximate Chi Square Value (0.05)	21163
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	21161
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	250199	95% Adjusted Gamma UCL (use when n<50)	250215
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.933	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0914	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	11.82	Mean of logged Data	12.4
Maximum of Logged Data	13.06	SD of logged Data	0.18
Assuming Lognormal Distribution			
95% H-UCL	250005	90% Chebyshev (MVUE) UCL	253084
95% Chebyshev (MVUE) UCL	256264	97.5% Chebyshev (MVUE) UCL	260677
99% Chebyshev (MVUE) UCL	269346		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	250407	95% Jackknife UCL	250418
95% Standard Bootstrap UCL	250387	95% Bootstrap-t UCL	250726
95% Hall's Bootstrap UCL	250841	95% Percentile Bootstrap UCL	250417
95% BCA Bootstrap UCL	250936		
90% Chebyshev(Mean, Sd) UCL	253838	95% Chebyshev(Mean, Sd) UCL	257278
97.5% Chebyshev(Mean, Sd) UCL	262053	99% Chebyshev(Mean, Sd) UCL	271432
Suggested UCL to Use			
95% Student's-t UCL	250418	or 95% Modified-t UCL	250458
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals, dissolved (ug/l)***selenium***7782-49-2***ug/l****d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	37
Number of Detects	28	Number of Non-Detects	334
Number of Distinct Detects	28	Number of Distinct Non-Detects	9
Minimum Detect	0.582	Minimum Non-Detect	1.43
Maximum Detect	2.53	Maximum Non-Detect	20
Variance Detects	0.327	Percent Non-Detects	92.27%
Mean Detects	1.235	SD Detects	0.572
Median Detects	1.22	CV Detects	0.463

Skewness Detects	0.657	Kurtosis Detects	-0.658
Mean of Logged Detects	0.108	SD of Logged Detects	0.461
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.901	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.144	Standard Error of Mean	0.0881
SD	0.507	95% KM (BCA) UCL	1.307
95% KM (t) UCL	1.289	95% KM (Percentile Bootstrap) UCL	1.292
95% KM (z) UCL	1.289	95% KM Bootstrap t UCL	1.306
90% KM Chebyshev UCL	1.408	95% KM Chebyshev UCL	1.528
97.5% KM Chebyshev UCL	1.694	99% KM Chebyshev UCL	2.02
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.775	Anderson-Darling GOF Test	
5% A-D Critical Value	0.749	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.17	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.166	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.042	k star (bias corrected MLE)	4.525
Theta hat (MLE)	0.245	Theta star (bias corrected MLE)	0.273
nu hat (MLE)	282.3	nu star (bias corrected)	253.4
MLE Mean (bias corrected)	1.235	MLE Sd (bias corrected)	0.58
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	5.088	nu hat (KM)	3684
Approximate Chi Square Value (N/A, α)	3544	Adjusted Chi Square Value (N/A, β)	3543
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.189	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1.19
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.197	Mean	1.145
Maximum	3.013	Median	1.072
SD	0.511	CV	0.446
k hat (MLE)	4.976	k star (bias corrected MLE)	4.937
Theta hat (MLE)	0.23	Theta star (bias corrected MLE)	0.232
nu hat (MLE)	3603	nu star (bias corrected)	3574
MLE Mean (bias corrected)	1.145	MLE Sd (bias corrected)	0.515
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3436	Adjusted Chi Square Value (N/A, β)	3436
95% Gamma Approximate UCL (use when $n \geq 50$)	1.19	95% Gamma Adjusted UCL (use when $n < 50$)	1.191
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.164	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.139	Mean in Log Scale	0.0392
SD in Original Scale	0.502	SD in Log Scale	0.426
95% t UCL (assumes normality of ROS data)	1.182	95% Percentile Bootstrap UCL	1.183
95% BCA Bootstrap UCL	1.184	95% Bootstrap t UCL	1.182
95% H-UCL (Log ROS)	1.185		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	0.0424	95% H-UCL (KM -Log)	1.188
KM SD (logged)	0.425	95% Critical H Value (KM-Log)	1.76
KM Standard Error of Mean (logged)	0.0771		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.089	Mean in Log Scale	0.588
SD in Original Scale	1.728	SD in Log Scale	0.46
95% t UCL (Assumes normality)	2.239	95% H-Stat UCL	2.09
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	1.289	95% KM (Percentile Bootstrap) UCL	1.292
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals, dissolved (ug/l)***silicon***7440-21-3***ug/l***d)			
General Statistics			
Total Number of Observations	27	Number of Distinct Observations	25
		Number of Missing Observations	0
Minimum	655	Mean	1377
Maximum	5250	Median	1160
SD	854.6	Std. Error of Mean	164.5
Coefficient of Variation	0.62	Skewness	3.835
Normal GOF Test			
Shapiro Wilk Test Statistic	0.575	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.262	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1658	95% Adjusted-CLT UCL (Chen-1995)	1778
		95% Modified-t UCL (Johnson-1978)	1678
Gamma GOF Test			
A-D Test Statistic	1.584	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.747	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.194	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.169	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	5.191	k star (bias corrected MLE)	4.639
Theta hat (MLE)	265.4	Theta star (bias corrected MLE)	296.9
nu hat (MLE)	280.3	nu star (bias corrected)	250.5
MLE Mean (bias corrected)	1377	MLE Sd (bias corrected)	639.5
		Approximate Chi Square Value (0.05)	214.8
Adjusted Level of Significance	0.0401	Adjusted Chi Square Value	212.7
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1606	95% Adjusted Gamma UCL (use when n<50)	1622
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.865	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.923	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.155	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.171	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.485	Mean of logged Data	7.129
Maximum of Logged Data	8.566	SD of logged Data	0.401
Assuming Lognormal Distribution			
95% H-UCL	1568	90% Chebyshev (MVUE) UCL	1668
95% Chebyshev (MVUE) UCL	1813	97.5% Chebyshev (MVUE) UCL	2015
99% Chebyshev (MVUE) UCL	2411		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1648	95% Jackknife UCL	1658
95% Standard Bootstrap UCL	1645	95% Bootstrap-t UCL	1965
95% Hall's Bootstrap UCL	2754	95% Percentile Bootstrap UCL	1666
95% BCA Bootstrap UCL	1834		
90% Chebyshev(Mean, Sd) UCL	1871	95% Chebyshev(Mean, Sd) UCL	2094
97.5% Chebyshev(Mean, Sd) UCL	2404	99% Chebyshev(Mean, Sd) UCL	3014
Suggested UCL to Use			
95% Student's-t UCL	1658	or 95% Modified-t UCL	1678

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (metals, dissolved (ug/l)***sodium***7440-23-5***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	177
		Number of Missing Observations	0
Minimum	3200000	Mean	6677431
Maximum	9360000	Median	6790000
SD	746406	Std. Error of Mean	39230
Coefficient of Variation	0.112	Skewness	-1.174
Normal GOF Test			
Shapiro Wilk Test Statistic	0.897	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	6742125	95% Adjusted-CLT UCL (Chen-1995)	6739372
		95% Modified-t UCL (Johnson-1978)	6741721
Gamma GOF Test			
A-D Test Statistic	12.99	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.149	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	69.38	k star (bias corrected MLE)	68.81
Theta hat (MLE)	96238	Theta star (bias corrected MLE)	97039
nu hat (MLE)	50235	nu star (bias corrected)	49820
MLE Mean (bias corrected)	6677431	MLE Sd (bias corrected)	804968
		Approximate Chi Square Value (0.05)	49302
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	49299
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	6747599	95% Adjusted Gamma UCL (use when n<50)	6747876
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.815	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.161	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0466	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	14.98	Mean of logged Data	15.71
Maximum of Logged Data	16.05	SD of logged Data	0.126
Assuming Lognormal Distribution			
95% H-UCL	6756174	90% Chebyshev (MVUE) UCL	6815052
95% Chebyshev (MVUE) UCL	6875348	97.5% Chebyshev (MVUE) UCL	6959038
99% Chebyshev (MVUE) UCL	7123429		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	6741959	95% Jackknife UCL	6742125
95% Standard Bootstrap UCL	6743267	95% Bootstrap-t UCL	6739586
95% Hall's Bootstrap UCL	6738977	95% Percentile Bootstrap UCL	6745525
95% BCA Bootstrap UCL	6736271		
90% Chebyshev(Mean, Sd) UCL	6795122	95% Chebyshev(Mean, Sd) UCL	6848431
97.5% Chebyshev(Mean, Sd) UCL	6922424	99% Chebyshev(Mean, Sd) UCL	7067767
Suggested UCL to Use			
95% Student's-t UCL	6742125	or 95% Modified-t UCL	6741721

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

RESULT_VALUE (metals, dissolved (ug/l)***thallium***7440-28-0***ug/l***d)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	17
Number of Detects	8	Number of Non-Detects	354
Number of Distinct Detects	8	Number of Distinct Non-Detects	10
Minimum Detect	0.3	Minimum Non-Detect	0.2
Maximum Detect	55.7	Maximum Non-Detect	100
Variance Detects	378.3	Percent Non-Detects	97.79%
Mean Detects	14.15	SD Detects	19.45
Median Detects	5.25	CV Detects	1.374
Skewness Detects	1.72	Kurtosis Detects	2.625
Mean of Logged Detects	1.478	SD of Logged Detects	1.912
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.769	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.682	Standard Error of Mean	0.226
SD	3.53	95% KM (BCA) UCL	1.042
95% KM (t) UCL	1.055	95% KM (Percentile Bootstrap) UCL	1.06
95% KM (z) UCL	1.054	95% KM Bootstrap t UCL	1.248
90% KM Chebyshev UCL	1.361	95% KM Chebyshev UCL	1.668
97.5% KM Chebyshev UCL	2.095	99% KM Chebyshev UCL	2.933
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.219	Anderson-Darling GOF Test	
5% A-D Critical Value	0.76	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.147	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.308	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.536	k star (bias corrected MLE)	0.419
Theta hat (MLE)	26.38	Theta star (bias corrected MLE)	33.81
nu hat (MLE)	8.581	nu star (bias corrected)	6.697
MLE Mean (bias corrected)	14.15	MLE Sd (bias corrected)	21.87
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0374	nu hat (KM)	27.05
Approximate Chi Square Value (27.05, α)	16.19	Adjusted Chi Square Value (27.05, β)	16.16
95% Gamma Approximate KM-UCL (use when n>=50)	1.14	95% Gamma Adjusted KM-UCL (use when n<50)	1.142
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.538
Maximum	55.7	Median	0.01
SD	3.633	CV	6.747
k hat (MLE)	0.203	k star (bias corrected MLE)	0.204
Theta hat (MLE)	2.647	Theta star (bias corrected MLE)	2.645
nu hat (MLE)	147.3	nu star (bias corrected)	147.4
MLE Mean (bias corrected)	0.538	MLE Sd (bias corrected)	1.193
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (147.36, α)	120.3	Adjusted Chi Square Value (147.36, β)	120.2
95% Gamma Approximate UCL (use when n>=50)	0.66	95% Gamma Adjusted UCL (use when n<50)	0.66
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.948	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.145	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.484	Mean in Log Scale	-4.085
SD in Original Scale	3.44	SD in Log Scale	2.626
95% t UCL (assumes normality of ROS data)	0.782	95% Percentile Bootstrap UCL	0.796
95% BCA Bootstrap UCL	1.033	95% Bootstrap t UCL	1.565

95% H-UCL (Log ROS)	0.891		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.336	95% H-UCL (KM -Log)	0.388
KM SD (logged)	0.784	95% Critical H Value (KM-Log)	1.963
KM Standard Error of Mean (logged)	0.13		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.273	Mean in Log Scale	1.251
SD in Original Scale	8.827	SD in Log Scale	1.307
95% t UCL (Assumes normality)	8.039	95% H-Stat UCL	9.669
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.055	95% KM (Percentile Bootstrap) UCL	1.06
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals, dissolved (ug/l)***tin***7440-31-5***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	17
Number of Detects	10	Number of Non-Detects	352
Number of Distinct Detects	10	Number of Distinct Non-Detects	8
Minimum Detect	1.3	Minimum Non-Detect	0.9
Maximum Detect	17	Maximum Non-Detect	100
Variance Detects	29.31	Percent Non-Detects	97.24%
Mean Detects	5.85	SD Detects	5.414
Median Detects	3.4	CV Detects	0.925
Skewness Detects	1.29	Kurtosis Detects	0.586
Mean of Logged Detects	1.398	SD of Logged Detects	0.897
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.817	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.261	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.601	Standard Error of Mean	0.217
SD	1.453	95% KM (BCA) UCL	2.012
95% KM (t) UCL	1.959	95% KM (Percentile Bootstrap) UCL	1.997
95% KM (z) UCL	1.958	95% KM Bootstrap t UCL	2.092
90% KM Chebyshev UCL	2.253	95% KM Chebyshev UCL	2.548
97.5% KM Chebyshev UCL	2.957	99% KM Chebyshev UCL	3.762
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.444	Anderson-Darling GOF Test	
5% A-D Critical Value	0.739	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.205	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.271	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.503	k star (bias corrected MLE)	1.119
Theta hat (MLE)	3.892	Theta star (bias corrected MLE)	5.229
nu hat (MLE)	30.06	nu star (bias corrected)	22.37
MLE Mean (bias corrected)	5.85	MLE Sd (bias corrected)	5.531
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.214	nu hat (KM)	879.2
Approximate Chi Square Value (879.15, α)	811.3	Adjusted Chi Square Value (879.15, β)	811.1
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.735	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1.736
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.996
Maximum	17	Median	0.01
SD	1.958	CV	1.966

k hat (MLE)	0.268	k star (bias corrected MLE)	0.268
Theta hat (MLE)	3.713	Theta star (bias corrected MLE)	3.719
nu hat (MLE)	194.2	nu star (bias corrected)	193.9
MLE Mean (bias corrected)	0.996	MLE Sd (bias corrected)	1.924
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (193.89, α)	162.7	Adjusted Chi Square Value (193.89, β)	162.6
95% Gamma Approximate UCL (use when n>=50)	1.187	95% Gamma Adjusted UCL (use when n<50)	1.188
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.152	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.48	Mean in Log Scale	0.0403
SD in Original Scale	1.576	SD in Log Scale	0.83
95% t UCL (assumes normality of ROS data)	1.616	95% Percentile Bootstrap UCL	1.622
95% BCA Bootstrap UCL	1.651	95% Bootstrap t UCL	1.641
95% H-UCL (Log ROS)	1.603		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	0.326	95% H-UCL (KM -Log)	1.608
KM SD (logged)	0.461	95% Critical H Value (KM-Log)	1.776
KM Standard Error of Mean (logged)	0.14		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.404	Mean in Log Scale	1.35
SD in Original Scale	10.49	SD in Log Scale	1.065
95% t UCL (Assumes normality)	8.312	95% H-Stat UCL	7.68
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.959	95% KM (Percentile Bootstrap) UCL	1.997
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (metals, dissolved (ug/l)***vanadium***7440-62-2***ug/l***d)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	41
Number of Detects	133	Number of Non-Detects	229
Number of Distinct Detects	37	Number of Distinct Non-Detects	4
Minimum Detect	0.7	Minimum Non-Detect	10
Maximum Detect	13.8	Maximum Non-Detect	250
Variance Detects	7.308	Percent Non-Detects	63.26%
Mean Detects	2.635	SD Detects	2.703
Median Detects	1.7	CV Detects	1.026
Skewness Detects	2.684	Kurtosis Detects	6.638
Mean of Logged Detects	0.69	SD of Logged Detects	0.65
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.58	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.355	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0768	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.575	Standard Error of Mean	0.217
SD	2.594	95% KM (BCA) UCL	2.939
95% KM (t) UCL	2.934	95% KM (Percentile Bootstrap) UCL	2.932
95% KM (z) UCL	2.933	95% KM Bootstrap t UCL	2.989
90% KM Chebyshev UCL	3.227	95% KM Chebyshev UCL	3.523
97.5% KM Chebyshev UCL	3.933	99% KM Chebyshev UCL	4.738
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.98	Anderson-Darling GOF Test	
5% A-D Critical Value	0.766	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.261	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0821	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.945	k star (bias corrected MLE) 1.907
Theta hat (MLE)	1.354	Theta star (bias corrected MLE) 1.382
nu hat (MLE)	517.5	nu star (bias corrected) 507.2
MLE Mean (bias corrected)	2.635	MLE Sd (bias corrected) 1.908
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.986	nu hat (KM) 713.7
Approximate Chi Square Value (713.70, α)	652.7	Adjusted Chi Square Value (713.70, β) 652.5
95% Gamma Approximate KM-UCL (use when n>=50)	2.816	95% Gamma Adjusted KM-UCL (use when n<50) 2.817
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 2.588
Maximum	13.8	Median 1.892
SD	2.416	CV 0.934
k hat (MLE)	1.016	k star (bias corrected MLE) 1.009
Theta hat (MLE)	2.548	Theta star (bias corrected MLE) 2.564
nu hat (MLE)	735.5	nu star (bias corrected) 730.7
MLE Mean (bias corrected)	2.588	MLE Sd (bias corrected) 2.576
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (730.72, α)	669	Adjusted Chi Square Value (730.72, β) 668.8
95% Gamma Approximate UCL (use when n>=50)	2.827	95% Gamma Adjusted UCL (use when n<50) 2.828
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.191	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0768	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.434	Mean in Log Scale 0.682
SD in Original Scale	1.983	SD in Log Scale 0.603
95% t UCL (assumes normality of ROS data)	2.606	95% Percentile Bootstrap UCL 2.623
95% BCA Bootstrap UCL	2.617	95% Bootstrap t UCL 2.632
95% H-UCL (Log ROS)	2.516	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	36	Mean in Log Scale 2.526
SD in Original Scale	46.25	SD in Log Scale 1.642
95% t UCL (Assumes normality)	40	95% H-Stat UCL 60.93
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	2.934	95% KM (% Bootstrap) UCL 2.932
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (metals, dissolved (ug/l)***zinc***7440-66-6***ug/l***d)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 36
Number of Detects	38	Number of Non-Detects 324
Number of Distinct Detects	33	Number of Distinct Non-Detects 3
Minimum Detect	8	Minimum Non-Detect 50
Maximum Detect	60.6	Maximum Non-Detect 500
Variance Detects	69.77	Percent Non-Detects 89.50%
Mean Detects	15.56	SD Detects 8.353
Median Detects	14.65	CV Detects 0.537
Skewness Detects	4.42	Kurtosis Detects 23.76
Mean of Logged Detects	2.669	SD of Logged Detects 0.353
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.572	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.224	Lilliefors GOF Test
5% Lilliefors Critical Value	0.144	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		

Mean	15.23	Standard Error of Mean	1.075
SD	7.318	95% KM (BCA) UCL	17.34
95% KM (t) UCL	17	95% KM (Percentile Bootstrap) UCL	17.13
95% KM (z) UCL	17	95% KM Bootstrap t UCL	18.08
90% KM Chebyshev UCL	18.45	95% KM Chebyshev UCL	19.91
97.5% KM Chebyshev UCL	21.94	99% KM Chebyshev UCL	25.93

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.528	Anderson-Darling GOF Test	
5% A-D Critical Value	0.75	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.15	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.143	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	6.763	k star (bias corrected MLE)	6.246
Theta hat (MLE)	2.3	Theta star (bias corrected MLE)	2.49
nu hat (MLE)	514	nu star (bias corrected)	474.7
MLE Mean (bias corrected)	15.56	MLE Sd (bias corrected)	6.224

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	4.33	nu hat (KM)	3135
Approximate Chi Square Value (N/A, α)	3006	Adjusted Chi Square Value (N/A, β)	3005
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	15.88	95% Gamma Adjusted KM-UCL (use when $n < 50$)	15.88

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	2.32	Mean	15.43
Maximum	60.6	Median	14.6
SD	6.92	CV	0.448
k hat (MLE)	5.103	k star (bias corrected MLE)	5.063
Theta hat (MLE)	3.024	Theta star (bias corrected MLE)	3.048
nu hat (MLE)	3695	nu star (bias corrected)	3665
MLE Mean (bias corrected)	15.43	MLE Sd (bias corrected)	6.857
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3526	Adjusted Chi Square Value (N/A, β)	3525
95% Gamma Approximate UCL (use when $n \geq 50$)	16.04	95% Gamma Adjusted UCL (use when $n < 50$)	16.04

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.885	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.118	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	15.16	Mean in Log Scale	2.661
SD in Original Scale	5.55	SD in Log Scale	0.335
95% t UCL (assumes normality of ROS data)	15.64	95% Percentile Bootstrap UCL	15.63
95% BCA Bootstrap UCL	15.66	95% Bootstrap t UCL	15.66
95% H-UCL (Log ROS)	15.61		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	2.658	95% H-UCL (KM -Log)	15.51
KM SD (logged)	0.327	95% Critical H Value (KM-Log)	1.721
KM Standard Error of Mean (logged)	0.051		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	95.69	Mean in Log Scale	4.159
SD in Original Scale	90.25	SD in Log Scale	0.886
95% t UCL (Assumes normality)	103.5	95% H-Stat UCL	104.3

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.70E+01	95% KM (% Bootstrap) UCL	1.71E+01
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (organometallic compounds (ug/l)***methyl mercury***22967-92-6***ug/l***)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 147
Number of Detects	266	Number of Non-Detects 96
Number of Distinct Detects	134	Number of Distinct Non-Detects 23
Minimum Detect	2.00E-05	Minimum Non-Detect 4.80E-05
Maximum Detect	0.00237	Maximum Non-Detect 2.86E-04
Variance Detects	3.17E-08	Percent Non-Detects 26.52%
Mean Detects	1.06E-04	SD Detects 1.78E-04
Median Detects	6.45E-05	CV Detects 1.68E+00
Skewness Detects	8.69E+00	Kurtosis Detects 1.01E+02
Mean of Logged Detects	-9.56E+00	SD of Logged Detects 7.80E-01
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.413	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.315	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0543	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	8.92E-05	Standard Error of Mean 8.22E-06
SD	1.56E-04	95% KM (BCA) UCL 1.04E-04
95% KM (t) UCL	1.03E-04	95% KM (Percentile Bootstrap) UCL 1.05E-04
95% KM (z) UCL	1.03E-04	95% KM Bootstrap t UCL 1.11E-04
90% KM Chebyshev UCL	1.14E-04	95% KM Chebyshev UCL 1.25E-04
97.5% KM Chebyshev UCL	1.41E-04	99% KM Chebyshev UCL 1.71E-04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	11.82	Anderson-Darling GOF Test
5% A-D Critical Value	0.775	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	1.42E-01	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0572	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.363	k star (bias corrected MLE) 1.35
Theta hat (MLE)	7.77E-05	Theta star (bias corrected MLE) 7.84E-05
nu hat (MLE)	7.25E+02	nu star (bias corrected) 718.2
MLE Mean (bias corrected)	1.06E-04	MLE Sd (bias corrected) 9.11E-05
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.329	nu hat (KM) 238.3
Approximate Chi Square Value (238.33, α)	203.6	Adjusted Chi Square Value (238.33, β) 203.5
95% Gamma Approximate KM-UCL (use when n>=50)	1.04E-04	95% Gamma Adjusted KM-UCL (use when n<50) 1.05E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2.00E-05	Mean 0.00273
Maximum	0.01	Median 9.15E-05
SD	0.00438	CV 1.603
k hat (MLE)	0.295	k star (bias corrected MLE) 0.294
Theta hat (MLE)	9.26E-03	Theta star (bias corrected MLE) 0.00928
nu hat (MLE)	2.14E+02	nu star (bias corrected) 213.1
MLE Mean (bias corrected)	2.73E-03	MLE Sd (bias corrected) 5.03E-03
		Adjusted Level of Significance (β) 4.93E-02
Approximate Chi Square Value (213.08, α)	1.80E+02	Adjusted Chi Square Value (213.08, β) 180.2
95% Gamma Approximate UCL (use when n>=50)	0.00323	95% Gamma Adjusted UCL (use when n<50) 0.00323
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	7.45E-02	Lilliefors GOF Test
5% Lilliefors Critical Value	5.43E-02	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	8.89E-05	Mean in Log Scale -9.724
SD in Original Scale	1.55E-04	SD in Log Scale 0.755
95% t UCL (assumes normality of ROS data)	1.02E-04	95% Percentile Bootstrap UCL 1.03E-04
95% BCA Bootstrap UCL	1.09E-04	95% Bootstrap t UCL 1.11E-04
95% H-UCL (Log ROS)	8.59E-05	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	9.23E-05	Mean in Log Scale -9.712
SD in Original Scale	1.56E-04	SD in Log Scale 0.808
95% t UCL (Assumes normality)	1.06E-04	95% H-Stat UCL 9.13E-05
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL1.04E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pcb aroclors (ug/l))***aroclor 1242***53469-21-9***ug/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	25
Number of Detects	14	Number of Non-Detects	321
Number of Distinct Detects	12	Number of Distinct Non-Detects	15
Minimum Detect	0.0053	Minimum Non-Detect	0.0094
Maximum Detect	0.029	Maximum Non-Detect	0.098
Variance Detects	4.84E-05	Percent Non-Detects	95.82%
Mean Detects	0.0162	SD Detects	6.95E-03
Median Detects	0.015	CV Detects	0.428
Skewness Detects	0.368	Kurtosis Detects	-0.639
Mean of Logged Detects	-4.215	SD of Logged Detects	0.472

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.967	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.142	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00737	Standard Error of Mean	0.00117
SD	0.00289	95% KM (BCA) UCL	0.00982
95% KM (t) UCL	0.0093	95% KM (Percentile Bootstrap) UCL	0.00975
95% KM (z) UCL	0.0093	95% KM Bootstrap t UCL	0.0221
90% KM Chebyshev UCL	0.0109	95% KM Chebyshev UCL	0.0125
97.5% KM Chebyshev UCL	0.0147	99% KM Chebyshev UCL	0.019

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.172	Anderson-Darling GOF Test	
5% A-D Critical Value	0.738	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.128	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.229	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	5.419	k star (bias corrected MLE)	4.305
Theta hat (MLE)	0.003	Theta star (bias corrected MLE)	0.00377
nu hat (MLE)	151.7	nu star (bias corrected)	120.6
MLE Mean (bias corrected)	0.0162	MLE Sd (bias corrected)	0.00783

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	6.52E+00	nu hat (KM)	4.37E+03
Approximate Chi Square Value (N/A, α)	4217	Adjusted Chi Square Value (N/A, β)	4216
95% Gamma Approximate KM-UCL (use when n>=50)	0.00764	95% Gamma Adjusted KM-UCL (use when n<50)	0.00764

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0053	Mean	0.0104
Maximum	0.029	Median	0.01
SD	0.00194	CV	0.186
k hat (MLE)	46.8	k star (bias corrected MLE)	46.38
Theta hat (MLE)	2.23E-04	Theta star (bias corrected MLE)	2.25E-04
nu hat (MLE)	31356	nu star (bias corrected)	31076
MLE Mean (bias corrected)	0.0104	MLE Sd (bias corrected)	0.00153
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	30667	Adjusted Chi Square Value (N/A, β)	30666
95% Gamma Approximate UCL (use when n>=50)	0.0106	95% Gamma Adjusted UCL (use when n<50)	0.0106

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.965	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.156	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0067	Mean in Log Scale	-5.115
SD in Original Scale	0.00349	SD in Log Scale	0.462
95% t UCL (assumes normality of ROS data)	0.00702	95% Percentile Bootstrap UCL	0.00702
95% BCA Bootstrap UCL	0.00707	95% Bootstrap t UCL	0.00705
95% H-UCL (Log ROS)	0.00699		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-4.962	95% H-UCL (KM -Log)	0.00754
KM SD (logged)	0.303	95% Critical H Value (KM-Log)	1.711
KM Standard Error of Mean (logged)	0.171		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00767	Mean in Log Scale	-5.143
SD in Original Scale	0.00934	SD in Log Scale	0.569
95% t UCL (Assumes normality)	0.00851	95% H-Stat UCL	0.00726
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0093	95% KM (Percentile Bootstrap) UCL	0.00975
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pcb aroclors (ug/l)***aroclor 1254***11097-69-1***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	45
Number of Detects	36	Number of Non-Detects	299
Number of Distinct Detects	30	Number of Distinct Non-Detects	15
Minimum Detect	0.0046	Minimum Non-Detect	0.0094
Maximum Detect	0.072	Maximum Non-Detect	0.098
Variance Detects	2.03E-04	Percent Non-Detects	89.25%
Mean Detects	0.0192	SD Detects	1.42E-02
Median Detects	0.0175	CV Detects	0.74
Skewness Detects	1.562	Kurtosis Detects	3.915
Mean of Logged Detects	-4.211	SD of Logged Detects	0.75
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.852	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.935	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.153	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.148	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00801	Standard Error of Mean	4.71E-04
SD	0.00634	95% KM (BCA) UCL	0.00876
95% KM (t) UCL	0.00879	95% KM (Percentile Bootstrap) UCL	0.0088
95% KM (z) UCL	0.00879	95% KM Bootstrap t UCL	0.00894
90% KM Chebyshev UCL	0.00942	95% KM Chebyshev UCL	0.0101
97.5% KM Chebyshev UCL	0.011	99% KM Chebyshev UCL	0.0127
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.929	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.159	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.149	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.069	k star (bias corrected MLE)	1.915
Theta hat (MLE)	0.0093	Theta star (bias corrected MLE)	0.01
nu hat (MLE)	149	nu star (bias corrected)	137.9
MLE Mean (bias corrected)	0.0192	MLE Sd (bias corrected)	0.0139
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.597	nu hat (KM)	1070
Approximate Chi Square Value (N/A, α)	995	Adjusted Chi Square Value (N/A, β)	994.7
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00862	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00862
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			

GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0046 Mean	0.0118
Maximum	0.072 Median	0.01
SD	0.00568 CV	0.48
k hat (MLE)	8.53 k star (bias corrected MLE)	8.456
Theta hat (MLE)	0.00139 Theta star (bias corrected MLE)	0.0014
nu hat (MLE)	5715 nu star (bias corrected)	5665
MLE Mean (bias corrected)	0.0118 MLE Sd (bias corrected)	0.00407
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	5491 Adjusted Chi Square Value (N/A, β)	5491
95% Gamma Approximate UCL (use when n>=50)	0.0122 95% Gamma Adjusted UCL (use when n<50)	0.0122
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.922 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.935 Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.161 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.148 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00898 Mean in Log Scale	-4.898
SD in Original Scale	0.0068 SD in Log Scale	0.586
95% t UCL (assumes normality of ROS data)	0.00959 95% Percentile Bootstrap UCL	0.0096
95% BCA Bootstrap UCL	0.00966 95% Bootstrap t UCL	0.00967
95% H-UCL (Log ROS)	0.00939	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.00875 Mean in Log Scale	-5.069
SD in Original Scale	0.0108 SD in Log Scale	0.65
95% t UCL (Assumes normality)	0.00972 95% H-Stat UCL	0.00831
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.00879 95% KM (% Bootstrap) UCL	0.0088
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (pcb aroclors (ug/l)***aroclor 1260***11096-82-5***ug/l***t)		
General Statistics		
Total Number of Observations	335 Number of Distinct Observations	20
Number of Detects	7 Number of Non-Detects	328
Number of Distinct Detects	6 Number of Distinct Non-Detects	15
Minimum Detect	0.018 Minimum Non-Detect	0.0094
Maximum Detect	0.19 Maximum Non-Detect	0.098
Variance Detects	0.00353 Percent Non-Detects	97.91%
Mean Detects	0.0746 SD Detects	5.94E-02
Median Detects	0.059 CV Detects	0.797
Skewness Detects	1.353 Kurtosis Detects	1.897
Mean of Logged Detects	-2.87 SD of Logged Detects	0.816
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.869 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803 Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.223 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335 Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0108 Standard Error of Mean	7.27E-04
SD	0.0123 95% KM (BCA) UCL	0.0121
95% KM (t) UCL	0.012 95% KM (Percentile Bootstrap) UCL	0.0121
95% KM (z) UCL	0.012 95% KM Bootstrap t UCL	0.0125
90% KM Chebyshev UCL	0.013 95% KM Chebyshev UCL	0.014
97.5% KM Chebyshev UCL	0.0153 99% KM Chebyshev UCL	0.018
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.235 Anderson-Darling GOF Test	
5% A-D Critical Value	0.715 Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.165 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.315 Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.977	k star (bias corrected MLE)	1.225
Theta hat (MLE)	0.0377	Theta star (bias corrected MLE)	0.0609
nu hat (MLE)	27.67	nu star (bias corrected)	17.15
MLE Mean (bias corrected)	0.0746	MLE Sd (bias corrected)	0.0674

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.771	nu hat (KM)	516.3
Approximate Chi Square Value (516.28, α)	464.6	Adjusted Chi Square Value (516.28, β)	464.4
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.012	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.012

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0113
Maximum	0.19	Median	0.01
SD	0.0122	CV	1.075
k hat (MLE)	5.698	k star (bias corrected MLE)	5.649
Theta hat (MLE)	0.00199	Theta star (bias corrected MLE)	0.00201
nu hat (MLE)	3818	nu star (bias corrected)	3785
MLE Mean (bias corrected)	0.0113	MLE Sd (bias corrected)	0.00478
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3643	Adjusted Chi Square Value (N/A, β)	3642
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0118	95% Gamma Adjusted UCL (use when $n < 50$)	0.0118

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.973	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.165	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00245	Mean in Log Scale	-8.712
SD in Original Scale	0.0134	SD in Log Scale	2.294
95% t UCL (assumes normality of ROS data)	0.00365	95% Percentile Bootstrap UCL	0.00374
95% BCA Bootstrap UCL	0.00425	95% Bootstrap t UCL	0.00499
95% H-UCL (Log ROS)	0.00351		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-4.628	95% H-UCL (KM -Log)	0.0104
KM SD (logged)	0.282	95% Critical H Value (KM-Log)	1.704
KM Standard Error of Mean (logged)	0.0168		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00866	Mean in Log Scale	-5.138
SD in Original Scale	0.0154	SD in Log Scale	0.632
95% t UCL (Assumes normality)	0.01	95% H-Stat UCL	0.00765

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.012	95% KM (Percentile Bootstrap) UCL	0.0121
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pcb aroclors (ug/l))***total pcb aroclors (u = 1/2)***tpcb_n***ug/l***t)

General Statistics

Total Number of Observations	335	Number of Distinct Observations	63
Number of Detects	5.50E+01	Number of Non-Detects	280
Number of Distinct Detects	49	Number of Distinct Non-Detects	15
Minimum Detect	0.0423	Minimum Non-Detect	0.0094
Maximum Detect	0.452	Maximum Non-Detect	0.098
Variance Detects	0.00359	Percent Non-Detects	83.58%
Mean Detects	0.073	SD Detects	0.0599
Median Detects	0.0576	CV Detects	8.22E-01
Skewness Detects	5.205	Kurtosis Detects	30.92
Mean of Logged Detects	-2.745	SD of Logged Detects	0.417

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.443	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.33	Lilliefors GOF Test
5% Lilliefors Critical Value	0.119	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0202	Standard Error of Mean 0.00188
SD	0.0338	95% KM (BCA) UCL 0.0236
95% KM (t) UCL	0.0233	95% KM (Percentile Bootstrap) UCL 0.0236
95% KM (z) UCL	0.0233	95% KM Bootstrap t UCL 0.0247
90% KM Chebyshev UCL	0.0258	95% KM Chebyshev UCL 0.0284
97.5% KM Chebyshev UCL	0.0319	99% KM Chebyshev UCL 0.0389
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	5.352	Anderson-Darling GOF Test
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.24	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.12	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	4.085	k star (bias corrected MLE) 3.874
Theta hat (MLE)	0.0179	Theta star (bias corrected MLE) 0.0188
nu hat (MLE)	449.4	nu star (bias corrected) 426.2
MLE Mean (bias corrected)	0.073	MLE Sd (bias corrected) 0.0371
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.356	nu hat (KM) 238.6
Approximate Chi Square Value (238.62, α)	203.9	Adjusted Chi Square Value (238.62, β) 203.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.0236	95% Gamma Adjusted KM-UCL (use when n<50) 0.0236
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.0205
Maximum	0.452	Median 0.01
SD	0.0336	CV 1.636
k hat (MLE)	1.385	k star (bias corrected MLE) 1.375
Theta hat (MLE)	0.0148	Theta star (bias corrected MLE) 0.0149
nu hat (MLE)	928.2	nu star (bias corrected) 921.2
MLE Mean (bias corrected)	0.0205	MLE Sd (bias corrected) 0.0175
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (921.18, α)	851.7	Adjusted Chi Square Value (921.18, β) 851.4
95% Gamma Approximate UCL (use when n>=50)	0.0222	95% Gamma Adjusted UCL (use when n<50) 0.0222
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.178	Lilliefors GOF Test
5% Lilliefors Critical Value	0.119	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0254	Mean in Log Scale -4.06
SD in Original Scale	0.0331	SD in Log Scale 0.849
95% t UCL (assumes normality of ROS data)	0.0284	95% Percentile Bootstrap UCL 0.0286
95% BCA Bootstrap UCL	0.0293	95% Bootstrap t UCL 0.0298
95% H-UCL (Log ROS)	0.0272	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.0183	Mean in Log Scale -4.772
SD in Original Scale	0.0353	SD in Log Scale 1.048
95% t UCL (Assumes normality)	0.0214	95% H-Stat UCL 0.0166
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.0233	95% KM (% Bootstrap) UCL 0.0236

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pcb congeners (ng/l)***total nondioxin-like pcb congener (km) (rl)***tndpcbcong_km_rl***ng/l***)

General Statistics			
Total Number of Observations	123	Number of Distinct Observations	123
Number of Detects	113	Number of Non-Detects	10
Number of Distinct Detects	113	Number of Distinct Non-Detects	10
Minimum Detect	2.012	Minimum Non-Detect	0.863
Maximum Detect	77.15	Maximum Non-Detect	9.222
Variance Detects	54.12	Percent Non-Detects	8.13%
Mean Detects	7.829	SD Detects	7.356
Median Detects	6.643	CV Detects	0.94
Skewness Detects	7.678	Kurtosis Detects	71.38
Mean of Logged Detects	1.901	SD of Logged Detects	0.5
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.45	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.25	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0833	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.48	Standard Error of Mean	0.648
SD	7.146	95% KM (BCA) UCL	8.778
95% KM (t) UCL	8.555	95% KM (Percentile Bootstrap) UCL	8.7
95% KM (z) UCL	8.547	95% KM Bootstrap t UCL	9.552
90% KM Chebyshev UCL	9.425	95% KM Chebyshev UCL	10.31
97.5% KM Chebyshev UCL	11.53	99% KM Chebyshev UCL	13.93
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.932	Anderson-Darling GOF Test	
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0866	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.342	k star (bias corrected MLE)	3.26
Theta hat (MLE)	2.342	Theta star (bias corrected MLE)	2.402
nu hat (MLE)	755.4	nu star (bias corrected)	736.7
MLE Mean (bias corrected)	7.829	MLE Sd (bias corrected)	4.336
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.096	nu hat (KM)	269.5
Approximate Chi Square Value (269.53, α)	232.5	Adjusted Chi Square Value (269.53, β)	232.1
95% Gamma Approximate KM-UCL (use when n>=50)	8.671	95% Gamma Adjusted KM-UCL (use when n<50)	8.686
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	7.404
Maximum	77.15	Median	6.407
SD	7.217	CV	0.975
k hat (MLE)	1.814	k star (bias corrected MLE)	1.775
Theta hat (MLE)	4.082	Theta star (bias corrected MLE)	4.171
nu hat (MLE)	446.2	nu star (bias corrected)	436.7
MLE Mean (bias corrected)	7.404	MLE Sd (bias corrected)	5.557
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (436.67, α)	389.2	Adjusted Chi Square Value (436.67, β)	388.7
95% Gamma Approximate UCL (use when n>=50)	8.306	95% Gamma Adjusted UCL (use when n<50)	8.318
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0756	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0833	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.504	Mean in Log Scale	1.849
SD in Original Scale	7.144	SD in Log Scale	0.523
95% t UCL (assumes normality of ROS data)	8.572	95% Percentile Bootstrap UCL	8.663
95% BCA Bootstrap UCL	9.293	95% Bootstrap t UCL	9.509
95% H-UCL (Log ROS)	7.946		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	1.827	95% H-UCL (KM -Log)	8.144
KM SD (logged)	0.585	95% Critical H Value (KM-Log)	1.873
KM Standard Error of Mean (logged)	0.0543		
DL/2 Statistics			

DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	7.408	Mean in Log Scale 1.807
SD in Original Scale	7.202	SD in Log Scale 0.615
95% t UCL (Assumes normality)	8.484	95% H-Stat UCL 8.179
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	8.778

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pcb congeners (ng/l)***total pcb congener (km) (rl)***tpcbcong_km_rl***ng/l***t)

General Statistics		
Total Number of Observations	123	Number of Distinct Observations 123
Number of Detects	112	Number of Non-Detects 11
Number of Distinct Detects	112	Number of Distinct Non-Detects 11
Minimum Detect	2.084	Minimum Non-Detect 0.888
Maximum Detect	91.59	Maximum Non-Detect 9.549
Variance Detects	74.93	Percent Non-Detects 8.94%
Mean Detects	8.395	SD Detects 8.656
Median Detects	6.87	CV Detects 1.031
Skewness Detects	8.195	Kurtosis Detects 78.18
Mean of Logged Detects	1.963	SD of Logged Detects 0.499

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.403	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.266	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0837	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	7.952	Standard Error of Mean 0.759
SD	8.374	95% KM (BCA) UCL 9.513
95% KM (t) UCL	9.211	95% KM (Percentile Bootstrap) UCL 9.364
95% KM (z) UCL	9.202	95% KM Bootstrap t UCL 10.63
90% KM Chebyshev UCL	10.23	95% KM Chebyshev UCL 11.26
97.5% KM Chebyshev UCL	12.7	99% KM Chebyshev UCL 15.51

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.547	Anderson-Darling GOF Test
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.132	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0869	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	3.2	k star (bias corrected MLE) 3.12
Theta hat (MLE)	2.624	Theta star (bias corrected MLE) 2.691
nu hat (MLE)	716.8	nu star (bias corrected) 698.9
MLE Mean (bias corrected)	8.395	MLE Sd (bias corrected) 4.753

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.902	nu hat (KM) 221.9
Approximate Chi Square Value (221.86, α)	188.4	Adjusted Chi Square Value (221.86, β) 188
95% Gamma Approximate KM-UCL (use when n>=50)	9.365	95% Gamma Adjusted KM-UCL (use when n<50) 9.384

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean 7.847
Maximum	91.59	Median 6.741
SD	8.466	CV 1.079
k hat (MLE)	1.529	k star (bias corrected MLE) 1.497
Theta hat (MLE)	5.134	Theta star (bias corrected MLE) 5.243
nu hat (MLE)	376	nu star (bias corrected) 368.2
MLE Mean (bias corrected)	7.847	MLE Sd (bias corrected) 6.414
		Adjusted Level of Significance (β) 0.048
Approximate Chi Square Value (368.17, α)	324.7	Adjusted Chi Square Value (368.17, β) 324.2
95% Gamma Approximate UCL (use when n>=50)	8.898	95% Gamma Adjusted UCL (use when n<50) 8.911

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0757	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0837	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.99	Mean in Log Scale	1.902
SD in Original Scale	8.369	SD in Log Scale	0.528
95% t UCL (assumes normality of ROS data)	9.24	95% Percentile Bootstrap UCL	9.45
95% BCA Bootstrap UCL	10.07	95% Bootstrap t UCL	10.6
95% H-UCL (Log ROS)	8.409		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	1.872	95% H-UCL (KM -Log)	8.683
KM SD (logged)	0.609	95% Critical H Value (KM-Log)	1.888
KM Standard Error of Mean (logged)	0.0568		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.878	Mean in Log Scale	1.854
SD in Original Scale	8.433	SD in Log Scale	0.633
95% t UCL (Assumes normality)	9.138	95% H-Stat UCL	8.695
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	9.513		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pcb congeners (ng/l)***total pcb congener teq 1998 (avian) (km) (rl)***tpcbngcpb98_km_ri***ng/l***t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	123
Number of Detects	91	Number of Non-Detects	32
Number of Distinct Detects	91	Number of Distinct Non-Detects	32
Minimum Detect	2.66E-04	Minimum Non-Detect	3.68E-04
Maximum Detect	0.0123	Maximum Non-Detect	0.00125
Variance Detects	1.82E-06	Percent Non-Detects	26.02%
Mean Detects	0.00121	SD Detects	0.00135
Median Detects	8.91E-04	CV Detects	1.117
Skewness Detects	6.544	Kurtosis Detects	52.26
Mean of Logged Detects	-6.941	SD of Logged Detects	0.584
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.467	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.247	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0929	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.02E-03	Standard Error of Mean	1.09E-04
SD	0.0012	95% KM (BCA) UCL	0.0012
95% KM (t) UCL	0.0012	95% KM (Percentile Bootstrap) UCL	1.22E-03
95% KM (z) UCL	0.00119	95% KM Bootstrap t UCL	0.00133
90% KM Chebyshev UCL	0.00134	95% KM Chebyshev UCL	0.00149
97.5% KM Chebyshev UCL	0.0017	99% KM Chebyshev UCL	0.0021
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.569	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.176	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0947	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.406	k star (bias corrected MLE)	2.334
Theta hat (MLE)	5.02E-04	Theta star (bias corrected MLE)	5.17E-04
nu hat (MLE)	437.9	nu star (bias corrected)	424.8
MLE Mean (bias corrected)	0.00121	MLE Sd (bias corrected)	7.90E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.713	nu hat (KM)	175.4
Approximate Chi Square Value (175.43, α)	145.8	Adjusted Chi Square Value (175.43, β)	145.5

95% Gamma Approximate KM-UCL (use when n>=50)	0.00122	95% Gamma Adjusted KM-UCL (use when n<50)	0.00122
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.66E-04	Mean	0.00349
Maximum	1.23E-02	Median	0.00106
SD	0.00404	CV	1.157
k hat (MLE)	0.867	k star (bias corrected MLE)	0.852
Theta hat (MLE)	0.00403	Theta star (bias corrected MLE)	0.0041
nu hat (MLE)	213.4	nu star (bias corrected)	209.5
MLE Mean (bias corrected)	0.00349	MLE Sd (bias corrected)	0.00379
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (209.52, α)	177	Adjusted Chi Square Value (209.52, β)	176.7
95% Gamma Approximate UCL (use when n>=50)	4.14E-03	95% Gamma Adjusted UCL (use when n<50)	0.00414
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.131	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0929	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00101	Mean in Log Scale	-7.154
SD in Original Scale	0.00121	SD in Log Scale	0.63
95% t UCL (assumes normality of ROS data)	0.00119	95% Percentile Bootstrap UCL	0.00121
95% BCA Bootstrap UCL	0.0013	95% Bootstrap t UCL	0.00134
95% H-UCL (Log ROS)	0.00106		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.86E-04	Mean in Log Scale	-7.217
SD in Original Scale	0.00122	SD in Log Scale	0.707
95% t UCL (Assumes normality)	0.00117	95% H-Stat UCL	0.00107
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	1.20E-03		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pcb congeners (ng/l)***total pcb congener teq 1998 (fish) (km) (rl)****pcbcngcpf98_km_rl***ng/l****t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	123
Number of Detects	13	Number of Non-Detects	110
Number of Distinct Detects	13	Number of Distinct Non-Detects	110
Minimum Detect	2.87E-06	Minimum Non-Detect	3.13E-06
Maximum Detect	7.72E-05	Maximum Non-Detect	1.26E-04
Variance Detects	3.93E-10	Percent Non-Detects	89.43%
Mean Detects	1.65E-05	SD Detects	1.98E-05
Median Detects	1.05E-05	CV Detects	N/A
Skewness Detects	2.80E+00	Kurtosis Detects	8.34E+00
Mean of Logged Detects	-11.4	SD of Logged Detects	0.828
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.607	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.866	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.345	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.246	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.39E-06	Standard Error of Mean	8.27E-07
SD	7.74E-06	95% KM (BCA) UCL	7.28E-06
95% KM (t) UCL	6.76E-06	95% KM (Percentile Bootstrap) UCL	6.91E-06
95% KM (z) UCL	6.75E-06	95% KM Bootstrap t UCL	7.38E-06
90% KM Chebyshev UCL	7.87E-06	95% KM Chebyshev UCL	8.99E-06
97.5% KM Chebyshev UCL	1.06E-05	99% KM Chebyshev UCL	1.36E-05
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.962	Anderson-Darling GOF Test	
5% A-D Critical Value	0.751	Detected Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.275	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.241	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.437	k star (bias corrected MLE)	1.157
Theta hat (MLE)	1.15E-05	Theta star (bias corrected MLE)	1.43E-05
nu hat (MLE)	37.37	nu star (bias corrected)	30.08
MLE Mean (bias corrected)	1.65E-05	MLE Sd (bias corrected)	1.53E-05
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.485	nu hat (KM)	119.4
Approximate Chi Square Value (119.35, α)	95.13	Adjusted Chi Square Value (119.35, β)	94.87
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.76E-06	95% Gamma Adjusted KM-UCL (use when $n < 50$)	6.78E-06
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.87E-06	Mean	0.00894
Maximum	0.01	Median	0.01
SD	0.00308	CV	0.345
k hat (MLE)	9.57E-01	k star (bias corrected MLE)	0.939
Theta hat (MLE)	9.35E-03	Theta star (bias corrected MLE)	0.00953
nu hat (MLE)	2.35E+02	nu star (bias corrected)	2.31E+02
MLE Mean (bias corrected)	8.94E-03	MLE Sd (bias corrected)	9.23E-03
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (230.92, α)	196.7	Adjusted Chi Square Value (230.92, β)	196.4
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0105	95% Gamma Adjusted UCL (use when $n < 50$)	0.0105
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.927	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.866	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.209	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.246	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.15E-06	Mean in Log Scale	-12.68
SD in Original Scale	7.54E-06	SD in Log Scale	0.527
95% t UCL (assumes normality of ROS data)	5.27E-06	95% Percentile Bootstrap UCL	5.29E-06
95% BCA Bootstrap UCL	6.13E-06	95% Bootstrap t UCL	7.54E-06
95% H-UCL (Log ROS)	3.89E-06		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-12.42	95% H-UCL (KM -Log)	5.39E-06
KM SD (logged)	0.604	95% Critical H Value (KM-Log)	1.884
KM Standard Error of Mean (logged)	0.0921		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.74E-06	Mean in Log Scale	-11.82
SD in Original Scale	1.03E-05	SD in Log Scale	0.704
95% t UCL (Assumes normality)	1.13E-05	95% H-Stat UCL	1.07E-05
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	6.76E-06	95% KM (% Bootstrap) UCL	6.91E-06
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pcb congeners (ng/l)***total pcb congener teq 2005 (mammal) (km) (rl)***tpcbcongcpm_km_rl***ng/l***t)			
General Statistics			
Total Number of Observations	123	Number of Distinct Observations	123
Number of Detects	12	Number of Non-Detects	111
Number of Distinct Detects	12	Number of Distinct Non-Detects	111
Minimum Detect	9.76E-05	Minimum Non-Detect	3.20E-05
Maximum Detect	1.78E-03	Maximum Non-Detect	1.99E-03
Variance Detects	2.44E-07	Percent Non-Detects	90.24%
Mean Detects	3.25E-04	SD Detects	4.94E-04
Median Detects	1.32E-04	CV Detects	1.52E+00
Skewness Detects	2.82E+00	Kurtosis Detects	8.10E+00

Mean of Logged Detects	-8.566	SD of Logged Detects	0.886
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.509	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.425	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.256	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.89E-05	Standard Error of Mean	1.77E-05
SD	1.74E-04	95% KM (BCA) UCL	1.23E-04
95% KM (t) UCL	1.08E-04	95% KM (Percentile Bootstrap) UCL	1.12E-04
95% KM (z) UCL	1.08E-04	95% KM Bootstrap t UCL	1.33E-04
90% KM Chebyshev UCL	1.32E-04	95% KM Chebyshev UCL	1.56E-04
97.5% KM Chebyshev UCL	1.89E-04	99% KM Chebyshev UCL	2.55E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.207	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.367	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.252	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.073	k star (bias corrected MLE)	0.86
Theta hat (MLE)	3.03E-04	Theta star (bias corrected MLE)	3.78E-04
nu hat (MLE)	25.75	nu star (bias corrected)	20.64
MLE Mean (bias corrected)	3.25E-04	MLE Sd (bias corrected)	3.50E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.205	nu hat (KM)	50.44
Approximate Chi Square Value (50.44, α)	35.13	Adjusted Chi Square Value (50.44, β)	34.98
95% Gamma Approximate KM-UCL (use when n>=50)	1.13E-04	95% Gamma Adjusted KM-UCL (use when n<50)	1.14E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	9.76E-05	Mean	0.00906
Maximum	0.01	Median	0.01
SD	0.00289	CV	0.319
k hat (MLE)	1.89E+00	k star (bias corrected MLE)	1.849
Theta hat (MLE)	4.79E-03	Theta star (bias corrected MLE)	0.0049
nu hat (MLE)	4.65E+02	nu star (bias corrected)	4.55E+02
MLE Mean (bias corrected)	9.06E-03	MLE Sd (bias corrected)	6.66E-03
		Adjusted Level of Significance (β)	0.048
Approximate Chi Square Value (454.92, α)	406.5	Adjusted Chi Square Value (454.92, β)	405.9
95% Gamma Approximate UCL (use when n>=50)	0.0101	95% Gamma Adjusted UCL (use when n<50)	0.0101
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	6.81E-01	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	8.59E-01	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.317	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.256	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	5.86E-05	Mean in Log Scale	-10.25
SD in Original Scale	1.72E-04	SD in Log Scale	0.638
95% t UCL (assumes normality of ROS data)	8.44E-05	95% Percentile Bootstrap UCL	8.74E-05
95% BCA Bootstrap UCL	1.07E-04	95% Bootstrap t UCL	1.85E-04
95% H-UCL (Log ROS)	4.84E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.67E-04	Mean in Log Scale	-9.052
SD in Original Scale	2.08E-04	SD in Log Scale	0.802
95% t UCL (Assumes normality)	1.98E-04	95% H-Stat UCL	1.87E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.08E-04	95% KM (% Bootstrap) UCL	1.12E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***2,4'-ddd (o,p'-ddd)***53-19-0***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	70
Number of Detects	108	Number of Non-Detects	254
Number of Distinct Detects	59	Number of Distinct Non-Detects	13
Minimum Detect	1.50E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	2.30E-03	Maximum Non-Detect	1.30E-02
Variance Detects	2.57E-07	Percent Non-Detects	70.17%
Mean Detects	5.56E-04	SD Detects	5.06E-04
Median Detects	3.60E-04	CV Detects	9.11E-01
Skewness Detects	1.87E+00	Kurtosis Detects	2.76E+00
Mean of Logged Detects	-7.789	SD of Logged Detects	0.716
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.712	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.274	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0853	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.38E-04	Standard Error of Mean	2.66E-05
SD	3.62E-04	95% KM (BCA) UCL	4.84E-04
95% KM (t) UCL	4.82E-04	95% KM (Percentile Bootstrap) UCL	4.83E-04
95% KM (z) UCL	4.82E-04	95% KM Bootstrap t UCL	4.88E-04
90% KM Chebyshev UCL	5.18E-04	95% KM Chebyshev UCL	5.55E-04
97.5% KM Chebyshev UCL	6.05E-04	99% KM Chebyshev UCL	7.03E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.803	Anderson-Darling GOF Test	
5% A-D Critical Value	0.767	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.195	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0887	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.853	k star (bias corrected MLE)	1.808
Theta hat (MLE)	3.00E-04	Theta star (bias corrected MLE)	3.07E-04
nu hat (MLE)	400.3	nu star (bias corrected)	390.5
MLE Mean (bias corrected)	5.56E-04	MLE Sd (bias corrected)	4.13E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.467	nu hat (KM)	1062
Approximate Chi Square Value (N/A, α)	987.6	Adjusted Chi Square Value (N/A, β)	987.4
95% Gamma Approximate KM-UCL (use when n>=50)	4.72E-04	95% Gamma Adjusted KM-UCL (use when n<50)	4.72E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.50E-04	Mean	0.00718
Maximum	1.00E-02	Median	0.01
SD	4.34E-03	CV	0.604
k hat (MLE)	9.40E-01	k star (bias corrected MLE)	9.34E-01
Theta hat (MLE)	7.64E-03	Theta star (bias corrected MLE)	7.69E-03
nu hat (MLE)	6.80E+02	nu star (bias corrected)	676.1
MLE Mean (bias corrected)	0.00718	MLE Sd (bias corrected)	0.00743
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (676.06, α)	616.7	Adjusted Chi Square Value (676.06, β)	616.5
95% Gamma Approximate UCL (use when n>=50)	7.87E-03	95% Gamma Adjusted UCL (use when n<50)	0.00788
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.145	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0853	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.43E-04	Mean in Log Scale	-7.917
SD in Original Scale	3.32E-04	SD in Log Scale	5.96E-01
95% t UCL (assumes normality of ROS data)	4.71E-04	95% Percentile Bootstrap UCL	4.71E-04
95% BCA Bootstrap UCL	4.75E-04	95% Bootstrap t UCL	4.74E-04
95% H-UCL (Log ROS)	4.61E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	

Mean in Original Scale	0.00119	Mean in Log Scale	-7.22
SD in Original Scale	0.0015	SD in Log Scale	0.893
95% t UCL (Assumes normality)	0.00132	95% H-Stat UCL	0.0012
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	4.82E-04	95% KM (% Bootstrap) UCL	4.83E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***2,4'-dde (o,p'-dde)***3424-82-6***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	43
Number of Detects	69	Number of Non-Detects	293
Number of Distinct Detects	32	Number of Distinct Non-Detects	13
Minimum Detect	1.40E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.022	Maximum Non-Detect	1.30E-02
Variance Detects	7.64E-06	Percent Non-Detects	80.94%
Mean Detects	8.67E-04	SD Detects	2.76E-03
Median Detects	2.20E-04	CV Detects	3.19E+00
Skewness Detects	6.89E+00	Kurtosis Detects	5.20E+01
Mean of Logged Detects	-8.041	SD of Logged Detects	1.016

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.283	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.396	Lilliefors GOF Test
5% Lilliefors Critical Value	0.107	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.72E-04	Standard Error of Mean	6.79E-05
SD	0.00124	95% KM (BCA) UCL	5.00E-04
95% KM (t) UCL	4.84E-04	95% KM (Percentile Bootstrap) UCL	4.94E-04
95% KM (z) UCL	4.84E-04	95% KM Bootstrap t UCL	6.48E-04
90% KM Chebyshev UCL	5.76E-04	95% KM Chebyshev UCL	6.68E-04
97.5% KM Chebyshev UCL	7.96E-04	99% KM Chebyshev UCL	0.00105

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	12.12	Anderson-Darling GOF Test
5% A-D Critical Value	0.805	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.372	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.113	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	6.20E-01	k star (bias corrected MLE)	0.603
Theta hat (MLE)	0.0014	Theta star (bias corrected MLE)	0.00144
nu hat (MLE)	85.6	nu star (bias corrected)	83.21
MLE Mean (bias corrected)	8.67E-04	MLE Sd (bias corrected)	0.00112

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0898	nu hat (KM)	64.99
Approximate Chi Square Value (64.99, α)	47.44	Adjusted Chi Square Value (64.99, β)	47.39
95% Gamma Approximate KM-UCL (use when n>=50)	5.10E-04	95% Gamma Adjusted KM-UCL (use when n<50)	5.11E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.40E-04	Mean	0.00826
Maximum	2.20E-02	Median	0.01
SD	0.00379	CV	0.459
k hat (MLE)	1.22E+00	k star (bias corrected MLE)	1.21E+00
Theta hat (MLE)	6.78E-03	Theta star (bias corrected MLE)	6.83E-03
nu hat (MLE)	8.82E+02	nu star (bias corrected)	875.8
MLE Mean (bias corrected)	0.00826	MLE Sd (bias corrected)	0.00751
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (875.79, α)	808.1	Adjusted Chi Square Value (875.79, β)	807.9
95% Gamma Approximate UCL (use when n>=50)	8.95E-03	95% Gamma Adjusted UCL (use when n<50)	0.00895

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.296	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.107	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.14E-04	Mean in Log Scale	-8.242
SD in Original Scale	1.23E-03	SD in Log Scale	0.739
95% t UCL (assumes normality of ROS data)	5.20E-04	95% Percentile Bootstrap UCL	5.37E-04
95% BCA Bootstrap UCL	6.24E-04	95% Bootstrap t UCL	7.20E-04
95% H-UCL (Log ROS)	3.73E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00124	Mean in Log Scale	-7.249
SD in Original Scale	0.00188	SD in Log Scale	0.95
95% t UCL (Assumes normality)	0.00141	95% H-Stat UCL	0.00124
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	5.00E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pesticides (ug/l)***2,4'-ddt (o,p'-ddt)***789-02-6***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	17
Number of Detects	4	Number of Non-Detects	358
Number of Distinct Detects	4	Number of Distinct Non-Detects	13
Minimum Detect	2.30E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	2.70E-03	Maximum Non-Detect	0.013
Variance Detects	1.51E-06	Percent Non-Detects	98.90%
Mean Detects	8.55E-04	SD Detects	0.00123
Median Detects	2.45E-04	CV Detects	1.44E+00
Skewness Detects	2.00E+00	Kurtosis Detects	4.00E+00
Mean of Logged Detects	-7.73	SD of Logged Detects	1.211
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.636	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.439	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.48E-04	Standard Error of Mean	1.08E-05
SD	1.41E-04	95% KM (BCA) UCL	N/A
95% KM (t) UCL	2.66E-04	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	2.66E-04	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	2.81E-04	95% KM Chebyshev UCL	2.95E-04
97.5% KM Chebyshev UCL	3.16E-04	99% KM Chebyshev UCL	3.56E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.915	Anderson-Darling GOF Test	
5% A-D Critical Value	0.668	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.468	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.404	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.88	k star (bias corrected MLE)	0.387
Theta hat (MLE)	9.71E-04	Theta star (bias corrected MLE)	0.00221
nu hat (MLE)	7.044	nu star (bias corrected)	3.094
MLE Mean (bias corrected)	8.55E-04	MLE Sd (bias corrected)	1.37E-03
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.082	nu hat (KM)	2232
Approximate Chi Square Value (N/A, α)	2123	Adjusted Chi Square Value (N/A, β)	2122
95% Gamma Approximate KM-UCL (use when n>=50)	2.61E-04	95% Gamma Adjusted KM-UCL (use when n<50)	2.61E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			

For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.30E-04	Mean	0.0099
Maximum	0.01	Median	0.01
SD	9.64E-04	CV	0.0974
k hat (MLE)	2.07E+01	k star (bias corrected MLE)	20.51
Theta hat (MLE)	4.79E-04	Theta star (bias corrected MLE)	4.83E-04
nu hat (MLE)	1.50E+04	nu star (bias corrected)	1.48E+04
MLE Mean (bias corrected)	9.90E-03	MLE Sd (bias corrected)	2.19E-03
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	14566	Adjusted Chi Square Value (N/A, β)	14565
95% Gamma Approximate UCL (use when n>=50)	0.0101	95% Gamma Adjusted UCL (use when n<50)	N/A
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.656	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.429	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.25E-04	Mean in Log Scale	-8.263
SD in Original Scale	2.55E-04	SD in Log Scale	0.676
95% t UCL (assumes normality of ROS data)	3.47E-04	95% Percentile Bootstrap UCL	3.48E-04
95% BCA Bootstrap UCL	3.49E-04	95% Bootstrap t UCL	3.48E-04
95% H-UCL (Log ROS)	3.47E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.327	95% H-UCL (KM -Log)	2.47E-04
KM SD (logged)	0.143	95% Critical H Value (KM-Log)	1.668
KM Standard Error of Mean (logged)	0.0244		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00123	Mean in Log Scale	-7.114
SD in Original Scale	0.00151	SD in Log Scale	0.785
95% t UCL (Assumes normality)	0.00136	95% H-Stat UCL	0.0012
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	2.66E-04	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pesticides (ug/l)***4,4'-ddd (p,p'-ddd)***72-54-8***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	30
Number of Detects	22	Number of Non-Detects	340
Number of Distinct Detects	21	Number of Distinct Non-Detects	13
Minimum Detect	6.80E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	1.34E-02	Maximum Non-Detect	1.30E-02
Variance Detects	1.31E-05	Percent Non-Detects	93.92%
Mean Detects	2.41E-03	SD Detects	3.62E-03
Median Detects	1.05E-03	CV Detects	1.50E+00
Skewness Detects	2.84E+00	Kurtosis Detects	7.151
Mean of Logged Detects	-6.537	SD of Logged Detects	0.852
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.487	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.329	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.189	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.56E-04	Standard Error of Mean	6.32E-05
SD	9.91E-04	95% KM (BCA) UCL	8.64E-04
95% KM (t) UCL	8.60E-04	95% KM (Percentile Bootstrap) UCL	8.65E-04
95% KM (z) UCL	8.60E-04	95% KM Bootstrap t UCL	9.15E-04
90% KM Chebyshev UCL	9.45E-04	95% KM Chebyshev UCL	0.00103
97.5% KM Chebyshev UCL	0.00115	99% KM Chebyshev UCL	0.00138

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.883	Anderson-Darling GOF Test
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.282	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.19	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.12	k star (bias corrected MLE) 0.997
Theta hat (MLE)	0.00215	Theta star (bias corrected MLE) 0.00242
nu hat (MLE)	49.26	nu star (bias corrected) 43.88
MLE Mean (bias corrected)	0.00241	MLE Sd (bias corrected) 0.00241
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.582	nu hat (KM) 421.5
Approximate Chi Square Value (421.47, α)	374.9	Adjusted Chi Square Value (421.47, β) 374.7
95% Gamma Approximate KM-UCL (use when n>=50)	8.50E-04	95% Gamma Adjusted KM-UCL (use when n<50) 8.50E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	6.80E-04	Mean 0.00954
Maximum	0.0134	Median 0.01
SD	0.00201	CV 0.211
k hat (MLE)	7.29E+00	k star (bias corrected MLE) 7.227
Theta hat (MLE)	0.00131	Theta star (bias corrected MLE) 0.00132
nu hat (MLE)	5.28E+03	nu star (bias corrected) 5.23E+03
MLE Mean (bias corrected)	9.54E-03	MLE Sd (bias corrected) 3.55E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	5065	Adjusted Chi Square Value (N/A, β) 5065
95% Gamma Approximate UCL (use when n>=50)	0.00985	95% Gamma Adjusted UCL (use when n<50) 0.00985
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.769	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	9.11E-01	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.211	Lilliefors GOF Test
5% Lilliefors Critical Value	0.189	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	6.15E-04	Mean in Log Scale -7.791
SD in Original Scale	1.05E-03	SD in Log Scale 8.26E-01
95% t UCL (assumes normality of ROS data)	7.06E-04	95% Percentile Bootstrap UCL 7.10E-04
95% BCA Bootstrap UCL	7.49E-04	95% Bootstrap t UCL 8.10E-04
95% H-UCL (Log ROS)	6.34E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00136	Mean in Log Scale -7.032
SD in Original Scale	0.00177	SD in Log Scale 0.796
95% t UCL (Assumes normality)	0.00151	95% H-Stat UCL 0.00132
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	8.60E-04	95% KM (% Bootstrap) UCL 8.65E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (pesticides (ug/l)***4,4'-ddt (p,p'-ddt)***50-29-3***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 24
Number of Detects	18	Number of Non-Detects 344
Number of Distinct Detects	14	Number of Distinct Non-Detects 13
Minimum Detect	7.80E-04	Minimum Non-Detect 5.00E-04
Maximum Detect	4.20E-03	Maximum Non-Detect 1.30E-02
Variance Detects	1.23E-06	Percent Non-Detects 95.03%
Mean Detects	1.61E-03	SD Detects 1.11E-03
Median Detects	9.80E-04	CV Detects 6.89E-01
Skewness Detects	1.35E+00	Kurtosis Detects 6.66E-01
Mean of Logged Detects	-6.618	SD of Logged Detects 0.592

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.757	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.275	Lilliefors GOF Test
5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	6.61E-04	Standard Error of Mean 3.60E-05
SD	3.90E-04	95% KM (BCA) UCL 7.17E-04
95% KM (t) UCL	7.20E-04	95% KM (Percentile Bootstrap) UCL 7.22E-04
95% KM (z) UCL	7.20E-04	95% KM Bootstrap t UCL 7.26E-04
90% KM Chebyshev UCL	7.69E-04	95% KM Chebyshev UCL 8.18E-04
97.5% KM Chebyshev UCL	8.86E-04	99% KM Chebyshev UCL 0.00102
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.566	Anderson-Darling GOF Test
5% A-D Critical Value	0.747	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.261	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.205	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.877	k star (bias corrected MLE) 2.434
Theta hat (MLE)	5.58E-04	Theta star (bias corrected MLE) 6.60E-04
nu hat (MLE)	103.6	nu star (bias corrected) 87.63
MLE Mean (bias corrected)	0.00161	MLE Sd (bias corrected) 0.00103
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.868	nu hat (KM) 2076
Approximate Chi Square Value (N/A, α)	1971	Adjusted Chi Square Value (N/A, β) 1971
95% Gamma Approximate KM-UCL (use when n>=50)	6.96E-04	95% Gamma Adjusted KM-UCL (use when n<50) 6.96E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	7.80E-04	Mean 0.00958
Maximum	0.01	Median 0.01
SD	0.00184	CV 0.192
k hat (MLE)	8.87E+00	k star (bias corrected MLE) 8.795
Theta hat (MLE)	1.08E-03	Theta star (bias corrected MLE) 0.00109
nu hat (MLE)	6.42E+03	nu star (bias corrected) 6.37E+03
MLE Mean (bias corrected)	9.58E-03	MLE Sd (bias corrected) 3.23E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	6183	Adjusted Chi Square Value (N/A, β) 6182
95% Gamma Approximate UCL (use when n>=50)	0.00987	95% Gamma Adjusted UCL (use when n<50) 0.00987
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	8.16E-01	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	8.97E-01	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.243	Lilliefors GOF Test
5% Lilliefors Critical Value	0.209	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	5.36E-04	Mean in Log Scale -7.784
SD in Original Scale	4.58E-04	SD in Log Scale 6.99E-01
95% t UCL (assumes normality of ROS data)	5.75E-04	95% Percentile Bootstrap UCL 5.77E-04
95% BCA Bootstrap UCL	5.82E-04	95% Bootstrap t UCL 5.82E-04
95% H-UCL (Log ROS)	5.70E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00129	Mean in Log Scale -7.065
SD in Original Scale	0.00154	SD in Log Scale 0.794
95% t UCL (Assumes normality)	0.00142	95% H-Stat UCL 0.00127
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	7.20E-04	95% KM (% Bootstrap) UCL 7.22E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***aldrin***309-00-2***ug/l****t)

General Statistics

Total Number of Observations	360	Number of Distinct Observations	19
Number of Detects	7	Number of Non-Detects	353
Number of Distinct Detects	5	Number of Distinct Non-Detects	15
Minimum Detect	9.00E-04	Minimum Non-Detect	1.00E-03
Maximum Detect	8.50E-03	Maximum Non-Detect	1.30E-02
Variance Detects	9.66E-06	Percent Non-Detects	98.06%
Mean Detects	2.87E-03	SD Detects	0.00311
Median Detects	1.20E-03	CV Detects	1.08E+00
Skewness Detects	1.43	Kurtosis Detects	0.431
Mean of Logged Detects	-6.285	SD of Logged Detects	0.935

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.683	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.418	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	9.79E-04	Standard Error of Mean	4.03E-05
SD	5.10E-04	95% KM (BCA) UCL	0.00108
95% KM (t) UCL	0.00105	95% KM (Percentile Bootstrap) UCL	0.00106
95% KM (z) UCL	0.00105	95% KM Bootstrap t UCL	0.00109
90% KM Chebyshev UCL	0.0011	95% KM Chebyshev UCL	0.00115
97.5% KM Chebyshev UCL	0.00123	99% KM Chebyshev UCL	0.00138

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.141	Anderson-Darling GOF Test	
5% A-D Critical Value	0.724	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.426	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.318	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	1.303	k star (bias corrected MLE)	0.84
Theta hat (MLE)	0.0022	Theta star (bias corrected MLE)	0.00341
nu hat (MLE)	18.24	nu star (bias corrected)	11.76
MLE Mean (bias corrected)	2.87E-03	MLE Sd (bias corrected)	3.13E-03

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	3.691	nu hat (KM)	2658
Approximate Chi Square Value (N/A, α)	2539	Adjusted Chi Square Value (N/A, β)	2538
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00102	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00102

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	9.00E-04	Mean	0.00986
Maximum	0.01	Median	0.01
SD	0.00107	CV	0.108
k hat (MLE)	2.69E+01	k star (bias corrected MLE)	26.69
Theta hat (MLE)	3.66E-04	Theta star (bias corrected MLE)	3.70E-04
nu hat (MLE)	1.94E+04	nu star (bias corrected)	1.92E+04
MLE Mean (bias corrected)	9.86E-03	MLE Sd (bias corrected)	1.91E-03
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	18893	Adjusted Chi Square Value (N/A, β)	18892
95% Gamma Approximate UCL (use when $n \geq 50$)	0.01	95% Gamma Adjusted UCL (use when $n < 50$)	0.01

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.73	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	8.03E-01	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.395	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	8.91E-04	Mean in Log Scale	-7.147
SD in Original Scale	6.15E-04	SD in Log Scale	4.71E-01
95% t UCL (assumes normality of ROS data)	9.44E-04	95% Percentile Bootstrap UCL	9.47E-04
95% BCA Bootstrap UCL	9.58E-04	95% Bootstrap t UCL	9.65E-04
95% H-UCL (Log ROS)	9.20E-04		

DL/2 Statistics

DL/2 Normal	DL/2 Log-Transformed
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Mean in Original Scale	0.00131	Mean in Log Scale	-7.028
SD in Original Scale	0.00159	SD in Log Scale	0.744
95% t UCL (Assumes normality)	0.00145	95% H-Stat UCL	0.00126
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.00105	95% KM (% Bootstrap) UCL	0.00106

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***chlordane, beta- (chlordane, trans-)***5103-74-2***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	45
Number of Detects	75	Number of Non-Detects	287
Number of Distinct Detects	36	Number of Distinct Non-Detects	13
Minimum Detect	0.0011	Minimum Non-Detect	5.00E-04
Maximum Detect	0.014	Maximum Non-Detect	0.013
Variance Detects	4.83E-06	Percent Non-Detects	79.28%
Mean Detects	0.00299	SD Detects	0.0022
Median Detects	0.0025	CV Detects	0.735
Skewness Detects	3.025	Kurtosis Detects	10.77
Mean of Logged Detects	-5.975	SD of Logged Detects	0.528

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.672 Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.245 Lilliefors GOF Test
5% Lilliefors Critical Value	0.102 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.14E-03	Standard Error of Mean	8.42E-05
SD	0.00146	95% KM (BCA) UCL	0.00129
95% KM (t) UCL	0.00128	95% KM (Percentile Bootstrap) UCL	0.00128
95% KM (z) UCL	0.00128	95% KM Bootstrap t UCL	0.00131
90% KM Chebyshev UCL	0.00139	95% KM Chebyshev UCL	0.00151
97.5% KM Chebyshev UCL	0.00166	99% KM Chebyshev UCL	0.00198

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	2.705 Anderson-Darling GOF Test
5% A-D Critical Value	0.758 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.17 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.104 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	3.244	k star (bias corrected MLE)	3.123
Theta hat (MLE)	9.22E-04	Theta star (bias corrected MLE)	9.57E-04
nu hat (MLE)	486.6	nu star (bias corrected)	468.5
MLE Mean (bias corrected)	0.00299	MLE Sd (bias corrected)	0.00169

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.606	nu hat (KM)	438.5
Approximate Chi Square Value (438.46, α)	390.9	Adjusted Chi Square Value (438.46, β)	390.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.00128	95% Gamma Adjusted KM-UCL (use when n<50)	0.00128

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0011	Mean	0.00855
Maximum	0.014	Median	0.01
SD	0.00301	CV	0.353
k hat (MLE)	4.103	k star (bias corrected MLE)	4.07
Theta hat (MLE)	0.00208	Theta star (bias corrected MLE)	0.0021
nu hat (MLE)	2970	nu star (bias corrected)	2947
MLE Mean (bias corrected)	0.00855	MLE Sd (bias corrected)	0.00424
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2822	Adjusted Chi Square Value (N/A, β)	2821
95% Gamma Approximate UCL (use when n>=50)	0.00893	95% Gamma Adjusted UCL (use when n<50)	0.00893

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.124	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.102	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00113	Mean in Log Scale	-7.272
SD in Original Scale	0.00144	SD in Log Scale	0.971
95% t UCL (assumes normality of ROS data)	0.00125	95% Percentile Bootstrap UCL	0.00126
95% BCA Bootstrap UCL	0.00128	95% Bootstrap t UCL	0.00128
95% H-UCL (Log ROS)	0.00124		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00172	Mean in Log Scale	-6.822
SD in Original Scale	0.00191	SD in Log Scale	0.914
95% t UCL (Assumes normality)	0.00189	95% H-Stat UCL	0.00183
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.28E-03	95% KM (% Bootstrap) UCL	1.28E-03
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pesticides (ug/l)***endosulfan sulfate***1031-07-8***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	21
Number of Detects	13	Number of Non-Detects	349
Number of Distinct Detects	10	Number of Distinct Non-Detects	13
Minimum Detect	6.10E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	1.50E-03	Maximum Non-Detect	1.30E-02
Variance Detects	9.26E-08	Percent Non-Detects	96.41%
Mean Detects	9.50E-04	SD Detects	3.04E-04
Median Detects	8.50E-04	CV Detects	3.20E-01
Skewness Detects	9.56E-01	Kurtosis Detects	-2.62E-01
Mean of Logged Detects	-7.002	SD of Logged Detects	0.3
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.867	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.866	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.246	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	6.15E-04	Standard Error of Mean	3.16E-05
SD	1.83E-04	95% KM (BCA) UCL	6.71E-04
95% KM (t) UCL	6.67E-04	95% KM (Percentile Bootstrap) UCL	6.69E-04
95% KM (z) UCL	6.67E-04	95% KM Bootstrap t UCL	6.75E-04
90% KM Chebyshev UCL	7.10E-04	95% KM Chebyshev UCL	7.53E-04
97.5% KM Chebyshev UCL	8.12E-04	99% KM Chebyshev UCL	9.29E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.505	Anderson-Darling GOF Test	
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.161	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.237	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	11.7	k star (bias corrected MLE)	9.051
Theta hat (MLE)	8.12E-05	Theta star (bias corrected MLE)	1.05E-04
nu hat (MLE)	304.2	nu star (bias corrected)	235.3
MLE Mean (bias corrected)	9.50E-04	MLE Sd (bias corrected)	3.16E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	11.26	nu hat (KM)	8150
Approximate Chi Square Value (N/A, α)	7941	Adjusted Chi Square Value (N/A, β)	7940
95% Gamma Approximate KM-UCL (use when n>=50)	6.31E-04	95% Gamma Adjusted KM-UCL (use when n<50)	6.31E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	6.10E-04	Mean 0.00967
Maximum	0.01	Median 0.01
SD	0.00169	CV 0.174
k hat (MLE)	9.59E+00	k star (bias corrected MLE) 9.511
Theta hat (MLE)	1.01E-03	Theta star (bias corrected MLE) 0.00102
nu hat (MLE)	6.94E+03	nu star (bias corrected) 6.89E+03
MLE Mean (bias corrected)	9.67E-03	MLE Sd (bias corrected) 3.14E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	6694	Adjusted Chi Square Value (N/A, β) 6694
95% Gamma Approximate UCL (use when n>=50)	0.00995	95% Gamma Adjusted UCL (use when n<50) 0.00995
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.921	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.866	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.146	Lilliefors GOF Test
5% Lilliefors Critical Value	0.246	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	5.88E-04	Mean in Log Scale -7.497
SD in Original Scale	2.05E-04	SD in Log Scale 0.339
95% t UCL (assumes normality of ROS data)	6.05E-04	95% Percentile Bootstrap UCL 6.05E-04
95% BCA Bootstrap UCL	6.06E-04	95% Bootstrap t UCL 6.07E-04
95% H-UCL (Log ROS)	6.06E-04	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-7.43	95% H-UCL (KM -Log) 6.27E-04
KM SD (logged)	0.255	95% Critical H Value (KM-Log) 1.697
KM Standard Error of Mean (logged)	0.0462	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00126	Mean in Log Scale -7.076
SD in Original Scale	0.00152	SD in Log Scale 0.767
95% t UCL (Assumes normality)	0.00139	95% H-Stat UCL 0.00123
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	6.67E-04	95% KM (Percentile Bootstrap) UCL 6.69E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (pesticides (ug/l)***endosulfan, beta (ii)***33213-65-9***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 16
Number of Detects	8	Number of Non-Detects 354
Number of Distinct Detects	5	Number of Distinct Non-Detects 13
Minimum Detect	9.70E-04	Minimum Non-Detect 5.00E-04
Maximum Detect	3.40E-03	Maximum Non-Detect 1.30E-02
Variance Detects	6.63E-07	Percent Non-Detects 97.79%
Mean Detects	1.41E-03	SD Detects 8.14E-04
Median Detects	1.15E-03	CV Detects 5.79E-01
Skewness Detects	2.72E+00	Kurtosis Detects 7.54E+00
Mean of Logged Detects	-6.66	SD of Logged Detects 0.408
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.55	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.426	Lilliefors GOF Test
5% Lilliefors Critical Value	0.313	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	5.91E-04	Standard Error of Mean 3.74E-05
SD	2.56E-04	95% KM (BCA) UCL 6.54E-04
95% KM (t) UCL	6.53E-04	95% KM (Percentile Bootstrap) UCL 6.54E-04
95% KM (z) UCL	6.53E-04	95% KM Bootstrap t UCL 6.58E-04
90% KM Chebyshev UCL	7.03E-04	95% KM Chebyshev UCL 7.54E-04
97.5% KM Chebyshev UCL	8.25E-04	99% KM Chebyshev UCL 9.63E-04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.459	Anderson-Darling GOF Test

5% A-D Critical Value	0.719	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.39	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.295	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	5.568	k star (bias corrected MLE) 3.563
Theta hat (MLE)	2.52E-04	Theta star (bias corrected MLE) 3.94E-04
nu hat (MLE)	89.09	nu star (bias corrected) 57.01
MLE Mean (bias corrected)	1.41E-03	MLE Sd (bias corrected) 7.44E-04
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	5.337	nu hat (KM) 3864
Approximate Chi Square Value (N/A, α)	3720	Adjusted Chi Square Value (N/A, β) 3720
95% Gamma Approximate KM-UCL (use when n>=50)	6.14E-04	95% Gamma Adjusted KM-UCL (use when n<50) 6.14E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	9.70E-04	Mean 0.00981
Maximum	0.01	Median 0.01
SD	0.00127	CV 0.129
k hat (MLE)	1.92E+01	k star (bias corrected MLE) 19.06
Theta hat (MLE)	5.10E-04	Theta star (bias corrected MLE) 5.15E-04
nu hat (MLE)	1.39E+04	nu star (bias corrected) 1.38E+04
MLE Mean (bias corrected)	9.81E-03	MLE Sd (bias corrected) 2.25E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	13530	Adjusted Chi Square Value (N/A, β) 13529
95% Gamma Approximate UCL (use when n>=50)	0.01	95% Gamma Adjusted UCL (use when n<50) 0.01
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.654	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.361	Lilliefors GOF Test
5% Lilliefors Critical Value	0.313	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	5.36E-04	Mean in Log Scale -7.645
SD in Original Scale	2.87E-04	SD in Log Scale 4.70E-01
95% t UCL (assumes normality of ROS data)	5.60E-04	95% Percentile Bootstrap UCL 5.60E-04
95% BCA Bootstrap UCL	5.65E-04	95% Bootstrap t UCL 5.63E-04
95% H-UCL (Log ROS)	5.58E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00126	Mean in Log Scale -7.088
SD in Original Scale	0.00153	SD in Log Scale 0.785
95% t UCL (Assumes normality)	0.00139	95% H-Stat UCL 0.00123
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	6.53E-04	95% KM (% Bootstrap) UCL 6.54E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (pesticides (ug/l)***endrin aldehyde***7421-93-4***ug/l***t)		
General Statistics		
Total Number of Observations	354	Number of Distinct Observations 20
Number of Detects	10	Number of Non-Detects 344
Number of Distinct Detects	10	Number of Distinct Non-Detects 13
Minimum Detect	8.80E-04	Minimum Non-Detect 5.00E-04
Maximum Detect	1.00E-02	Maximum Non-Detect 1.30E-02
Variance Detects	8.50E-06	Percent Non-Detects 97.18%
Mean Detects	2.66E-03	SD Detects 2.92E-03
Median Detects	1.30E-03	CV Detects 1.10E+00
Skewness Detects	2.12E+00	Kurtosis Detects 4.63E+00
Mean of Logged Detects	-6.316	SD of Logged Detects 0.848
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.671	Shapiro Wilk GOF Test

5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.354	Lilliefors GOF Test
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	6.25E-04	Standard Error of Mean 4.65E-05
SD	6.27E-04	95% KM (BCA) UCL 7.09E-04
95% KM (t) UCL	7.02E-04	95% KM (Percentile Bootstrap) UCL 7.01E-04
95% KM (z) UCL	7.02E-04	95% KM Bootstrap t UCL 7.23E-04
90% KM Chebyshev UCL	7.65E-04	95% KM Chebyshev UCL 8.28E-04
97.5% KM Chebyshev UCL	9.16E-04	99% KM Chebyshev UCL 0.00109
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.079	Anderson-Darling GOF Test
5% A-D Critical Value	0.74	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.331	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.271	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.441	k star (bias corrected MLE) 1.075
Theta hat (MLE)	0.00184	Theta star (bias corrected MLE) 0.00247
nu hat (MLE)	28.82	nu star (bias corrected) 21.5
MLE Mean (bias corrected)	2.66E-03	MLE Sd (bias corrected) 2.56E-03
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.993	nu hat (KM) 702.8
Approximate Chi Square Value (702.84, α)	642.3	Adjusted Chi Square Value (702.84, β) 642.1
95% Gamma Approximate KM-UCL (use when n>=50)	6.84E-04	95% Gamma Adjusted KM-UCL (use when n<50) 6.84E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	8.80E-04	Mean 0.00979
Maximum	0.01	Median 0.01
SD	0.0013	CV 0.133
k hat (MLE)	1.84E+01	k star (bias corrected MLE) 18.27
Theta hat (MLE)	5.31E-04	Theta star (bias corrected MLE) 5.36E-04
nu hat (MLE)	1.30E+04	nu star (bias corrected) 1.29E+04
MLE Mean (bias corrected)	9.79E-03	MLE Sd (bias corrected) 2.29E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	12674	Adjusted Chi Square Value (N/A, β) 12673
95% Gamma Approximate UCL (use when n>=50)	0.01	95% Gamma Adjusted UCL (use when n<50) 0.01
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.811	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.287	Lilliefors GOF Test
5% Lilliefors Critical Value	0.28	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3.13E-04	Mean in Log Scale -8.783
SD in Original Scale	6.71E-04	SD in Log Scale 1.16E+00
95% t UCL (assumes normality of ROS data)	3.72E-04	95% Percentile Bootstrap UCL 3.74E-04
95% BCA Bootstrap UCL	3.98E-04	95% Bootstrap t UCL 4.15E-04
95% H-UCL (Log ROS)	3.45E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.0013	Mean in Log Scale -7.078
SD in Original Scale	0.00162	SD in Log Scale 0.804
95% t UCL (Assumes normality)	0.00144	95% H-Stat UCL 0.00127
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	7.02E-04	95% KM (% Bootstrap) UCL 7.01E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (pesticides (ug/l)***endrin ketone***53494-70-5***ug/l***t)		

General Statistics		
Total Number of Observations	361	Number of Distinct Observations 21
Number of Detects	9	Number of Non-Detects 352
Number of Distinct Detects	8	Number of Distinct Non-Detects 13
Minimum Detect	1.10E-03	Minimum Non-Detect 5.00E-04
Maximum Detect	5.20E-03	Maximum Non-Detect 1.30E-02
Variance Detects	2.00E-06	Percent Non-Detects 97.51%
Mean Detects	2.61E-03	SD Detects 1.41E-03
Median Detects	2.00E-03	CV Detects 5.41E-01
Skewness Detects	9.57E-01	Kurtosis Detects -4.21E-01
Mean of Logged Detects	-6.07	SD of Logged Detects 0.518
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.254	Lilliefors GOF Test
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	5.83E-04	Standard Error of Mean 3.39E-05
SD	4.39E-04	95% KM (BCA) UCL 6.46E-04
95% KM (t) UCL	6.39E-04	95% KM (Percentile Bootstrap) UCL 6.42E-04
95% KM (z) UCL	6.39E-04	95% KM Bootstrap t UCL 6.62E-04
90% KM Chebyshev UCL	6.85E-04	95% KM Chebyshev UCL 7.31E-04
97.5% KM Chebyshev UCL	7.95E-04	99% KM Chebyshev UCL 9.21E-04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.432	Anderson-Darling GOF Test
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.203	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.28	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	4.248	k star (bias corrected MLE) 2.906
Theta hat (MLE)	6.15E-04	Theta star (bias corrected MLE) 8.98E-04
nu hat (MLE)	76.47	nu star (bias corrected) 52.31
MLE Mean (bias corrected)	2.61E-03	MLE Sd (bias corrected) 1.53E-03
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.767	nu hat (KM) 1276
Approximate Chi Square Value (N/A, α)	1194	Adjusted Chi Square Value (N/A, β) 1194
95% Gamma Approximate KM-UCL (use when n>=50)	6.23E-04	95% Gamma Adjusted KM-UCL (use when n<50) 6.23E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0011	Mean 0.00982
Maximum	0.01	Median 0.01
SD	0.00117	CV 0.119
k hat (MLE)	2.81E+01	k star (bias corrected MLE) 27.82
Theta hat (MLE)	3.50E-04	Theta star (bias corrected MLE) 3.53E-04
nu hat (MLE)	2.03E+04	nu star (bias corrected) 2.01E+04
MLE Mean (bias corrected)	9.82E-03	MLE Sd (bias corrected) 1.86E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	19754	Adjusted Chi Square Value (N/A, β) 19753
95% Gamma Approximate UCL (use when n>=50)	0.00998	95% Gamma Adjusted UCL (use when n<50) 0.00998
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.939	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.17	Lilliefors GOF Test
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.21E-04	Mean in Log Scale -9.425
SD in Original Scale	4.84E-04	SD in Log Scale 1.416
95% t UCL (assumes normality of ROS data)	2.63E-04	95% Percentile Bootstrap UCL 2.65E-04
95% BCA Bootstrap UCL	2.80E-04	95% Bootstrap t UCL 2.76E-04
95% H-UCL (Log ROS)	2.65E-04	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-7.529	95% H-UCL (KM -Log) 5.78E-04
KM SD (logged)	0.305	95% Critical H Value (KM-Log) 1.713
KM Standard Error of Mean (logged)	0.033	

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00129	Mean in Log Scale	-7.07
SD in Original Scale	0.00156	SD in Log Scale	0.801
95% t UCL (Assumes normality)	0.00143	95% H-Stat UCL	0.00127
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	6.39E-04	95% KM (Percentile Bootstrap) UCL	6.42E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pesticides (ug/l)***heptachlor***76-44-8***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	25
Number of Detects	14	Number of Non-Detects	348
Number of Distinct Detects	14	Number of Distinct Non-Detects	13
Minimum Detect	9.50E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	7.60E-03	Maximum Non-Detect	1.30E-02
Variance Detects	3.01E-06	Percent Non-Detects	96.13%
Mean Detects	2.35E-03	SD Detects	1.73E-03
Median Detects	2.00E-03	CV Detects	7.38E-01
Skewness Detects	2.36E+00	Kurtosis Detects	6.67E+00
Mean of Logged Detects	-6.234	SD of Logged Detects	0.589
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.74	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.226	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	6.30E-04	Standard Error of Mean	4.08E-05
SD	5.26E-04	95% KM (BCA) UCL	7.07E-04
95% KM (t) UCL	6.98E-04	95% KM (Percentile Bootstrap) UCL	7.02E-04
95% KM (z) UCL	6.97E-04	95% KM Bootstrap t UCL	7.24E-04
90% KM Chebyshev UCL	7.53E-04	95% KM Chebyshev UCL	8.08E-04
97.5% KM Chebyshev UCL	8.85E-04	99% KM Chebyshev UCL	0.00104
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.47	Anderson-Darling GOF Test	
5% A-D Critical Value	0.743	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.151	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.231	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.925	k star (bias corrected MLE)	2.346
Theta hat (MLE)	8.03E-04	Theta star (bias corrected MLE)	0.001
nu hat (MLE)	81.89	nu star (bias corrected)	65.68
MLE Mean (bias corrected)	2.35E-03	MLE Sd (bias corrected)	1.53E-03
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.435	nu hat (KM)	1039
Approximate Chi Square Value (N/A, α)	964.8	Adjusted Chi Square Value (N/A, β)	964.5
95% Gamma Approximate KM-UCL (use when n>=50)	6.79E-04	95% Gamma Adjusted KM-UCL (use when n<50)	6.79E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	9.50E-04	Mean	0.0097
Maximum	0.01	Median	0.01
SD	0.00151	CV	0.156
k hat (MLE)	1.53E+01	k star (bias corrected MLE)	15.21
Theta hat (MLE)	6.33E-04	Theta star (bias corrected MLE)	6.38E-04
nu hat (MLE)	1.11E+04	nu star (bias corrected)	1.10E+04
MLE Mean (bias corrected)	9.70E-03	MLE Sd (bias corrected)	2.49E-03
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	10769	Adjusted Chi Square Value (N/A, β)	10768

95% Gamma Approximate UCL (use when n>=50)	0.00992	95% Gamma Adjusted UCL (use when n<50)	0.00992
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.938	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.109	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.39E-04	Mean in Log Scale	-8.65
SD in Original Scale	5.81E-04	SD in Log Scale	1.133
95% t UCL (assumes normality of ROS data)	3.89E-04	95% Percentile Bootstrap UCL	3.90E-04
95% BCA Bootstrap UCL	4.09E-04	95% Bootstrap t UCL	4.08E-04
95% H-UCL (Log ROS)	3.80E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.473	95% H-UCL (KM -Log)	6.26E-04
KM SD (logged)	0.356	95% Critical H Value (KM-Log)	1.732
KM Standard Error of Mean (logged)	0.0435		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00131	Mean in Log Scale	-7.059
SD in Original Scale	0.00157	SD in Log Scale	0.805
95% t UCL (Assumes normality)	0.00144	95% H-Stat UCL	0.00129
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	6.98E-04	95% KM (Percentile Bootstrap) UCL	7.02E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pesticides (ug/l)***hexachlorocyclohexane (bhc), alpha-***319-84-6***ug/l****t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	21
Number of Detects	10	Number of Non-Detects	352
Number of Distinct Detects	10	Number of Distinct Non-Detects	13
Minimum Detect	7.10E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	1.76E-02	Maximum Non-Detect	1.30E-02
Variance Detects	2.91E-05	Percent Non-Detects	97.24%
Mean Detects	3.30E-03	SD Detects	0.00539
Median Detects	1.05E-03	CV Detects	1.63E+00
Skewness Detects	2.55E+00	Kurtosis Detects	6.571
Mean of Logged Detects	-6.434	SD of Logged Detects	1.08
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.556	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.417	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	6.53E-04	Standard Error of Mean	6.27E-05
SD	9.78E-04	95% KM (BCA) UCL	7.72E-04
95% KM (t) UCL	7.57E-04	95% KM (Percentile Bootstrap) UCL	7.61E-04
95% KM (z) UCL	7.56E-04	95% KM Bootstrap t UCL	8.16E-04
90% KM Chebyshev UCL	8.41E-04	95% KM Chebyshev UCL	9.26E-04
97.5% KM Chebyshev UCL	0.00104	99% KM Chebyshev UCL	0.00128
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.57	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.362	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.275	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.821	k star (bias corrected MLE)	0.641
Theta hat (MLE)	0.00402	Theta star (bias corrected MLE)	0.00515
nu hat (MLE)	16.42	nu star (bias corrected)	12.82
MLE Mean (bias corrected)	3.30E-03	MLE Sd (bias corrected)	4.12E-03

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.446	nu hat (KM)	322.8
Approximate Chi Square Value (322.77, α)	282.1	Adjusted Chi Square Value (322.77, β)	282
95% Gamma Approximate KM-UCL (use when n>=50)	7.47E-04	95% Gamma Adjusted KM-UCL (use when n<50)	7.48E-04

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.10E-04	Mean	0.00981
Maximum	0.0176	Median	0.01
SD	0.00139	CV	0.142
k hat (MLE)	1.59E+01	k star (bias corrected MLE)	15.74
Theta hat (MLE)	6.19E-04	Theta star (bias corrected MLE)	6.24E-04
nu hat (MLE)	1.15E+04	nu star (bias corrected)	1.14E+04
MLE Mean (bias corrected)	9.81E-03	MLE Sd (bias corrected)	2.47E-03
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	11148	Adjusted Chi Square Value (N/A, β)	11147
95% Gamma Approximate UCL (use when n>=50)	0.01	95% Gamma Adjusted UCL (use when n<50)	0.01

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.745	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.279	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.84E-04	Mean in Log Scale	-8.595
SD in Original Scale	0.00104	SD in Log Scale	1.141
95% t UCL (assumes normality of ROS data)	4.74E-04	95% Percentile Bootstrap UCL	4.86E-04
95% BCA Bootstrap UCL	5.30E-04	95% Bootstrap t UCL	6.03E-04
95% H-UCL (Log ROS)	4.06E-04		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.459	95% H-UCL (KM -Log)	6.28E-04
KM SD (logged)	0.335	95% Critical H Value (KM-Log)	1.724
KM Standard Error of Mean (logged)	0.0479		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00132	Mean in Log Scale	-7.069
SD in Original Scale	0.00178	SD in Log Scale	0.798
95% t UCL (Assumes normality)	0.00147	95% H-Stat UCL	0.00127
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	7.72E-04		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***hexachlorocyclohexane (bhc), beta-***319-85-7***ug/l****)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	24
Number of Detects	20	Number of Non-Detects	342
Number of Distinct Detects	15	Number of Distinct Non-Detects	13
Minimum Detect	9.80E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	1.10E-02	Maximum Non-Detect	1.30E-02
Variance Detects	1.04E-05	Percent Non-Detects	94.48%
Mean Detects	3.17E-03	SD Detects	3.23E-03
Median Detects	2.00E-03	CV Detects	1.02E+00
Skewness Detects	1.907	Kurtosis Detects	2.383
Mean of Logged Detects	-6.089	SD of Logged Detects	0.767

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.653	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.905	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.308	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.198	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.25E-04	Standard Error of Mean	6.47E-05
SD	0.001	95% KM (BCA) UCL	8.33E-04
95% KM (t) UCL	8.32E-04	95% KM (Percentile Bootstrap) UCL	8.34E-04
95% KM (z) UCL	8.32E-04	95% KM Bootstrap t UCL	8.72E-04
90% KM Chebyshev UCL	9.19E-04	95% KM Chebyshev UCL	0.00101
97.5% KM Chebyshev UCL	0.00113	99% KM Chebyshev UCL	0.00137

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.653	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.224	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.197	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.634	k star (bias corrected MLE)	1.422
Theta hat (MLE)	0.00194	Theta star (bias corrected MLE)	0.00223
nu hat (MLE)	65.37	nu star (bias corrected)	56.89
MLE Mean (bias corrected)	3.17E-03	MLE Sd (bias corrected)	2.66E-03

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.521	nu hat (KM)	377.5
Approximate Chi Square Value (377.53, α)	333.5	Adjusted Chi Square Value (377.53, β)	333.3
95% Gamma Approximate KM-UCL (use when n>=50)	8.21E-04	95% Gamma Adjusted KM-UCL (use when n<50)	8.21E-04

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	9.80E-04	Mean	0.00962
Maximum	0.011	Median	0.01
SD	0.00173	CV	0.18
k hat (MLE)	1.17E+01	k star (bias corrected MLE)	11.56
Theta hat (MLE)	8.26E-04	Theta star (bias corrected MLE)	8.33E-04
nu hat (MLE)	8.43E+03	nu star (bias corrected)	8.37E+03
MLE Mean (bias corrected)	9.62E-03	MLE Sd (bias corrected)	2.83E-03
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	8154	Adjusted Chi Square Value (N/A, β)	8153
95% Gamma Approximate UCL (use when n>=50)	0.00987	95% Gamma Adjusted UCL (use when n<50)	0.00987

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.852	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.905	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.198	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.60E-04	Mean in Log Scale	-9.139
SD in Original Scale	0.00104	SD in Log Scale	1.521
95% t UCL (assumes normality of ROS data)	4.50E-04	95% Percentile Bootstrap UCL	4.51E-04
95% BCA Bootstrap UCL	4.77E-04	95% Bootstrap t UCL	5.09E-04
95% H-UCL (Log ROS)	4.21E-04		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.426	95% H-UCL (KM -Log)	6.89E-04
KM SD (logged)	0.456	95% Critical H Value (KM-Log)	1.774
KM Standard Error of Mean (logged)	0.0496		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00138	Mean in Log Scale	-7.032
SD in Original Scale	0.00174	SD in Log Scale	0.823
95% t UCL (Assumes normality)	0.00153	95% H-Stat UCL	0.00135
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	8.32E-04	95% KM (% Bootstrap) UCL	8.34E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***hexachlorocyclohexane (bhc), delta-***319-86-8***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 61
Number of Detects	89	Number of Non-Detects 273
Number of Distinct Detects	54	Number of Distinct Non-Detects 13
Minimum Detect	3.60E-04	Minimum Non-Detect 5.00E-04
Maximum Detect	1.20E-02	Maximum Non-Detect 1.30E-02
Variance Detects	3.07E-06	Percent Non-Detects 75.41%
Mean Detects	1.24E-03	SD Detects 1.75E-03
Median Detects	5.70E-04	CV Detects 1.41E+00
Skewness Detects	3.94E+00	Kurtosis Detects 18.5
Mean of Logged Detects	-7.125	SD of Logged Detects 0.794
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.524	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.308	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0939	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	7.07E-04	Standard Error of Mean 5.35E-05
SD	9.54E-04	95% KM (BCA) UCL 8.03E-04
95% KM (t) UCL	7.95E-04	95% KM (Percentile Bootstrap) UCL 7.94E-04
95% KM (z) UCL	7.95E-04	95% KM Bootstrap t UCL 8.22E-04
90% KM Chebyshev UCL	8.68E-04	95% KM Chebyshev UCL 9.40E-04
97.5% KM Chebyshev UCL	0.00104	99% KM Chebyshev UCL 0.00124
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	8.581	Anderson-Darling GOF Test
5% A-D Critical Value	0.776	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.264	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0969	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.297	k star (bias corrected MLE) 1.261
Theta hat (MLE)	9.57E-04	Theta star (bias corrected MLE) 9.84E-04
nu hat (MLE)	230.8	nu star (bias corrected) 224.4
MLE Mean (bias corrected)	0.00124	MLE Sd (bias corrected) 0.00111
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.549	nu hat (KM) 397.3
Approximate Chi Square Value (397.27, α)	352.1	Adjusted Chi Square Value (397.27, β) 351.9
95% Gamma Approximate KM-UCL (use when n>=50)	7.98E-04	95% Gamma Adjusted KM-UCL (use when n<50) 7.98E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	3.60E-04	Mean 0.00785
Maximum	1.20E-02	Median 0.01
SD	3.87E-03	CV 0.494
k hat (MLE)	1.47E+00	k star (bias corrected MLE) 1.46E+00
Theta hat (MLE)	5.33E-03	Theta star (bias corrected MLE) 5.37E-03
nu hat (MLE)	1.07E+03	nu star (bias corrected) 1058
MLE Mean (bias corrected)	0.00785	MLE Sd (bias corrected) 0.00649
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	983	Adjusted Chi Square Value (N/A, β) 982.7
95% Gamma Approximate UCL (use when n>=50)	8.44E-03	95% Gamma Adjusted UCL (use when n<50) 0.00844
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.228	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0939	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	7.39E-04	Mean in Log Scale -7.476
SD in Original Scale	9.46E-04	SD in Log Scale 6.34E-01
95% t UCL (assumes normality of ROS data)	8.21E-04	95% Percentile Bootstrap UCL 8.28E-04
95% BCA Bootstrap UCL	8.52E-04	95% Bootstrap t UCL 8.49E-04
95% H-UCL (Log ROS)	7.37E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00128	Mean in Log Scale -7.104
SD in Original Scale	0.00163	SD in Log Scale 0.815
95% t UCL (Assumes normality)	0.00142	95% H-Stat UCL 0.00125
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	7.95E-04 95% KM (% Bootstrap) UCL	7.94E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***hexachlorocyclohexane (bhc), gamma- (lindane)***58-89-9***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 49
Number of Detects	48	Number of Non-Detects 314
Number of Distinct Detects	40	Number of Distinct Non-Detects 12
Minimum Detect	5.89E-04	Minimum Non-Detect 5.00E-04
Maximum Detect	0.029	Maximum Non-Detect 0.013
Variance Detects	2.85E-05	Percent Non-Detects 86.74%
Mean Detects	0.00396	SD Detects 0.00534
Median Detects	0.0016	CV Detects 1.349
Skewness Detects	2.85	Kurtosis Detects 9.898
Mean of Logged Detects	-6.086	SD of Logged Detects 0.973

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.636	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.3	Lilliefors GOF Test
5% Lilliefors Critical Value	0.128	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00129	Standard Error of Mean 1.29E-04
SD	0.00223	95% KM (BCA) UCL 0.00152
95% KM (t) UCL	0.0015	95% KM (Percentile Bootstrap) UCL 0.00152
95% KM (z) UCL	0.0015	95% KM Bootstrap t UCL 0.00156
90% KM Chebyshev UCL	0.00167	95% KM Chebyshev UCL 0.00185
97.5% KM Chebyshev UCL	0.00209	99% KM Chebyshev UCL 0.00257

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.149	Anderson-Darling GOF Test
5% A-D Critical Value	0.778	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.225	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.132	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.037	k star (bias corrected MLE) 0.986
Theta hat (MLE)	0.00382	Theta star (bias corrected MLE) 0.00401
nu hat (MLE)	99.55	nu star (bias corrected) 94.66
MLE Mean (bias corrected)	0.00396	MLE Sd (bias corrected) 0.00399

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.333	nu hat (KM) 241.4
Approximate Chi Square Value (241.37, α)	206.4	Adjusted Chi Square Value (241.37, β) 206.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.0015	95% Gamma Adjusted KM-UCL (use when n<50) 0.00151

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	5.89E-04	Mean 0.0092
Maximum	0.029	Median 0.01
SD	0.00281	CV 0.306
k hat (MLE)	4.59E+00	k star (bias corrected MLE) 4.554
Theta hat (MLE)	0.002	Theta star (bias corrected MLE) 0.00202
nu hat (MLE)	3.32E+03	nu star (bias corrected) 3.30E+03
MLE Mean (bias corrected)	9.20E-03	MLE Sd (bias corrected) 4.31E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	3164	Adjusted Chi Square Value (N/A, β) 3164
95% Gamma Approximate UCL (use when n>=50)	0.00958	95% Gamma Adjusted UCL (use when n<50) 0.00959

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.899	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.178	Lilliefors GOF Test
5% Lilliefors Critical Value	0.128	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0012	Mean in Log Scale	-7.241
SD in Original Scale	0.00226	SD in Log Scale	0.903
95% t UCL (assumes normality of ROS data)	0.00139	95% Percentile Bootstrap UCL	0.00141
95% BCA Bootstrap UCL	0.00148	95% Bootstrap t UCL	0.0015
95% H-UCL (Log ROS)	0.00119		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00171	Mean in Log Scale	-6.875
SD in Original Scale	0.00259	SD in Log Scale	0.853
95% t UCL (Assumes normality)	0.00193	95% H-Stat UCL	0.00163

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.50E-03	95% KM (% Bootstrap) UCL	1.52E-03
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***mirex***2385-85-5***ug/l****t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	20
Number of Detects	9	Number of Non-Detects	353
Number of Distinct Detects	8	Number of Distinct Non-Detects	13
Minimum Detect	4.60E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	1.40E-03	Maximum Non-Detect	1.30E-02
Variance Detects	9.03E-08	Percent Non-Detects	97.51%
Mean Detects	6.84E-04	SD Detects	3.00E-04
Median Detects	6.00E-04	CV Detects	4.39E-01
Skewness Detects	1.94E+00	Kurtosis Detects	4.34E+00
Mean of Logged Detects	-7.354	SD of Logged Detects	0.369

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.757	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.252	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level	

Detected Data appear Approximate Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	5.04E-04	Standard Error of Mean	1.74E-05
SD	1.02E-04	95% KM (BCA) UCL	5.35E-04
95% KM (t) UCL	5.33E-04	95% KM (Percentile Bootstrap) UCL	5.34E-04
95% KM (z) UCL	5.33E-04	95% KM Bootstrap t UCL	5.45E-04
90% KM Chebyshev UCL	5.57E-04	95% KM Chebyshev UCL	5.80E-04
97.5% KM Chebyshev UCL	6.13E-04	99% KM Chebyshev UCL	6.78E-04

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.658	Anderson-Darling GOF Test	
5% A-D Critical Value	0.722	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.217	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.28	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	7.565	k star (bias corrected MLE)	5.117
Theta hat (MLE)	9.05E-05	Theta star (bias corrected MLE)	1.34E-04
nu hat (MLE)	136.2	nu star (bias corrected)	92.11
MLE Mean (bias corrected)	6.84E-04	MLE Sd (bias corrected)	3.03E-04

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	24.51	nu hat (KM)	17744
Approximate Chi Square Value (N/A, α)	17436	Adjusted Chi Square Value (N/A, β)	17435
95% Gamma Approximate KM-UCL (use when n>=50)	5.13E-04	95% Gamma Adjusted KM-UCL (use when n<50)	5.13E-04

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	4.60E-04	Mean	0.00977
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Maximum	0.01	Median	0.01
SD	0.00145	CV	0.149
k hat (MLE)	1.13E+01	k star (bias corrected MLE)	11.2
Theta hat (MLE)	8.65E-04	Theta star (bias corrected MLE)	8.72E-04
nu hat (MLE)	8.18E+03	nu star (bias corrected)	8.11E+03
MLE Mean (bias corrected)	9.77E-03	MLE Sd (bias corrected)	2.92E-03
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	7903	Adjusted Chi Square Value (N/A, β)	7902
95% Gamma Approximate UCL (use when n>=50)	0.01	95% Gamma Adjusted UCL (use when n<50)	0.01
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.209	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	5.10E-04	Mean in Log Scale	-7.616
SD in Original Scale	1.39E-04	SD in Log Scale	0.262
95% t UCL (assumes normality of ROS data)	5.22E-04	95% Percentile Bootstrap UCL	5.22E-04
95% BCA Bootstrap UCL	5.23E-04	95% Bootstrap t UCL	5.22E-04
95% H-UCL (Log ROS)	5.22E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.607	95% H-UCL (KM -Log)	5.10E-04
KM SD (logged)	0.158	95% Critical H Value (KM-Log)	1.672
KM Standard Error of Mean (logged)	0.0297		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00124	Mean in Log Scale	-7.103
SD in Original Scale	0.00153	SD in Log Scale	0.783
95% t UCL (Assumes normality)	0.00138	95% H-Stat UCL	0.00121
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	5.33E-04	95% KM (Percentile Bootstrap) UCL	5.34E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pesticides (ug/l)***nonachlor, cis-***5103-73-1***ug/l****t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	26
Number of Detects	29	Number of Non-Detects	333
Number of Distinct Detects	13	Number of Distinct Non-Detects	13
Minimum Detect	1.80E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	4.60E-04	Maximum Non-Detect	1.30E-02
Variance Detects	3.35E-09	Percent Non-Detects	91.99%
Mean Detects	2.32E-04	SD Detects	5.79E-05
Median Detects	2.10E-04	CV Detects	2.50E-01
Skewness Detects	2.48E+00	Kurtosis Detects	8.02E+00
Mean of Logged Detects	-8.392	SD of Logged Detects	0.209
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.752	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.184	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.32E-04	Standard Error of Mean	1.08E-05
SD	5.69E-05	95% KM (BCA) UCL	2.51E-04
95% KM (t) UCL	2.50E-04	95% KM (Percentile Bootstrap) UCL	2.50E-04
95% KM (z) UCL	2.50E-04	95% KM Bootstrap t UCL	2.62E-04
90% KM Chebyshev UCL	2.64E-04	95% KM Chebyshev UCL	2.79E-04
97.5% KM Chebyshev UCL	2.99E-04	99% KM Chebyshev UCL	3.39E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.347	Anderson-Darling GOF Test	
5% A-D Critical Value	0.744	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.174	Kolmogrov-Smirnoff GOF	

5% K-S Critical Value	0.162	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	21.41	k star (bias corrected MLE) 19.22
Theta hat (MLE)	1.08E-05	Theta star (bias corrected MLE) 1.21E-05
nu hat (MLE)	1242	nu star (bias corrected) 1115
MLE Mean (bias corrected)	2.32E-04	MLE Sd (bias corrected) 5.29E-05
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	16.64	nu hat (KM) 12045
Approximate Chi Square Value (N/A, α)	11791	Adjusted Chi Square Value (N/A, β) 11790
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.37E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$) 2.37E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	1.80E-04	Mean 0.00922
Maximum	0.01	Median 0.01
SD	0.00266	CV 0.288
k hat (MLE)	2.41E+00	k star (bias corrected MLE) 2.389
Theta hat (MLE)	3.83E-03	Theta star (bias corrected MLE) 0.00386
nu hat (MLE)	1.74E+03	nu star (bias corrected) 1.73E+03
MLE Mean (bias corrected)	9.22E-03	MLE Sd (bias corrected) 5.96E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1634	Adjusted Chi Square Value (N/A, β) 1634
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00976	95% Gamma Adjusted UCL (use when $n < 50$) 0.00976
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	8.57E-01	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	9.26E-01	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.174	Lilliefors GOF Test
5% Lilliefors Critical Value	0.165	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.31E-04	Mean in Log Scale -8.392
SD in Original Scale	4.57E-05	SD in Log Scale 1.93E-01
95% t UCL (assumes normality of ROS data)	2.35E-04	95% Percentile Bootstrap UCL 2.35E-04
95% BCA Bootstrap UCL	2.35E-04	95% Bootstrap t UCL 2.35E-04
95% H-UCL (Log ROS)	2.35E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00121	Mean in Log Scale -7.184
SD in Original Scale	0.00155	SD in Log Scale 0.857
95% t UCL (Assumes normality)	0.00134	95% H-Stat UCL 0.0012
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	2.50E-04	95% KM (% Bootstrap) UCL 2.50E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (pesticides (ug/l)***nonachlor, trans-***39765-80-5***ug/l****t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 20
Number of Detects	10	Number of Non-Detects 352
Number of Distinct Detects	9	Number of Distinct Non-Detects 13
Minimum Detect	7.56E-04	Minimum Non-Detect 5.00E-04
Maximum Detect	8.50E-03	Maximum Non-Detect 1.30E-02
Variance Detects	8.97E-06	Percent Non-Detects 97.24%
Mean Detects	3.08E-03	SD Detects 2.99E-03
Median Detects	1.40E-03	CV Detects 9.71E-01
Skewness Detects	1.10E+00	Kurtosis Detects -7.09E-01
Mean of Logged Detects	-6.18	SD of Logged Detects 0.908
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.736	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.341	Lilliefors GOF Test

5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	6.27E-04	Standard Error of Mean 4.80E-05
SD	6.69E-04	95% KM (BCA) UCL 7.12E-04
95% KM (t) UCL	7.06E-04	95% KM (Percentile Bootstrap) UCL 7.08E-04
95% KM (z) UCL	7.06E-04	95% KM Bootstrap t UCL 7.30E-04
90% KM Chebyshev UCL	7.71E-04	95% KM Chebyshev UCL 8.36E-04
97.5% KM Chebyshev UCL	9.27E-04	99% KM Chebyshev UCL 0.0011
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.024	Anderson-Darling GOF Test
5% A-D Critical Value	0.741	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.273	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.272	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.399	k star (bias corrected MLE) 1.046
Theta hat (MLE)	0.0022	Theta star (bias corrected MLE) 0.00295
nu hat (MLE)	27.98	nu star (bias corrected) 20.92
MLE Mean (bias corrected)	3.08E-03	MLE Sd (bias corrected) 3.01E-03
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.879	nu hat (KM) 636.3
Approximate Chi Square Value (636.34, α)	578.8	Adjusted Chi Square Value (636.34, β) 578.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.89E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$) 6.89E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	7.56E-04	Mean 0.00981
Maximum	0.01	Median 0.01
SD	0.00123	CV 0.125
k hat (MLE)	2.08E+01	k star (bias corrected MLE) 20.65
Theta hat (MLE)	4.71E-04	Theta star (bias corrected MLE) 4.75E-04
nu hat (MLE)	1.51E+04	nu star (bias corrected) 1.50E+04
MLE Mean (bias corrected)	9.81E-03	MLE Sd (bias corrected) 2.16E-03
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	14667	Adjusted Chi Square Value (N/A, β) 14666
95% Gamma Approximate UCL (use when $n \geq 50$)	0.01	95% Gamma Adjusted UCL (use when $n < 50$) 0.01
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.836	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.226	Lilliefors GOF Test
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.59E-04	Mean in Log Scale -9.318
SD in Original Scale	7.14E-04	SD in Log Scale 1.418
95% t UCL (assumes normality of ROS data)	3.21E-04	95% Percentile Bootstrap UCL 3.30E-04
95% BCA Bootstrap UCL	3.46E-04	95% Bootstrap t UCL 3.69E-04
95% H-UCL (Log ROS)	2.96E-04	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-7.489	95% H-UCL (KM -Log) 6.12E-04
KM SD (logged)	0.342	95% Critical H Value (KM-Log) 1.726
KM Standard Error of Mean (logged)	0.0443	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00131	Mean in Log Scale -7.066
SD in Original Scale	0.00162	SD in Log Scale 0.803
95% t UCL (Assumes normality)	0.00145	95% H-Stat UCL 0.00128
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	7.06E-04	95% KM (% Bootstrap) UCL 7.08E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***oxychlordane***27304-13-8***ug/l***)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	23
Number of Detects	8	Number of Non-Detects	354
Number of Distinct Detects	8	Number of Distinct Non-Detects	15
Minimum Detect	3.00E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	1.80E-03	Maximum Non-Detect	1.70E-01
Variance Detects	2.58E-07	Percent Non-Detects	97.79%
Mean Detects	6.71E-04	SD Detects	5.08E-04
Median Detects	4.75E-04	CV Detects	7.56E-01
Skewness Detects	1.88E+00	Kurtosis Detects	3.77E+00
Mean of Logged Detects	-7.503	SD of Logged Detects	0.635
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.768	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.232	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.13E-04	Standard Error of Mean	5.14E-05
SD	2.71E-04	95% KM (BCA) UCL	5.15E-04
95% KM (t) UCL	4.98E-04	95% KM (Percentile Bootstrap) UCL	5.10E-04
95% KM (z) UCL	4.98E-04	95% KM Bootstrap t UCL	5.73E-04
90% KM Chebyshev UCL	5.67E-04	95% KM Chebyshev UCL	6.37E-04
97.5% KM Chebyshev UCL	7.34E-04	99% KM Chebyshev UCL	9.24E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.521	Anderson-Darling GOF Test	
5% A-D Critical Value	0.722	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.24	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.297	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.702	k star (bias corrected MLE)	1.772
Theta hat (MLE)	2.48E-04	Theta star (bias corrected MLE)	3.79E-04
nu hat (MLE)	43.23	nu star (bias corrected)	28.35
MLE Mean (bias corrected)	6.71E-04	MLE Sd (bias corrected)	5.04E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.323	nu hat (KM)	1682
Approximate Chi Square Value (N/A, α)	1587	Adjusted Chi Square Value (N/A, β)	1587
95% Gamma Approximate KM-UCL (use when n>=50)	4.38E-04	95% Gamma Adjusted KM-UCL (use when n<50)	4.38E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	3.00E-04	Mean	0.00979
Maximum	0.01	Median	0.01
SD	0.00138	CV	0.14
k hat (MLE)	1.17E+01	k star (bias corrected MLE)	11.64
Theta hat (MLE)	8.34E-04	Theta star (bias corrected MLE)	8.41E-04
nu hat (MLE)	8.50E+03	nu star (bias corrected)	8.43E+03
MLE Mean (bias corrected)	9.79E-03	MLE Sd (bias corrected)	2.87E-03
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	8217	Adjusted Chi Square Value (N/A, β)	8216
95% Gamma Approximate UCL (use when n>=50)	0.01	95% Gamma Adjusted UCL (use when n<50)	0.01
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.221	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.23E-04	Mean in Log Scale	-7.897
SD in Original Scale	2.30E-04	SD in Log Scale	0.504
95% t UCL (assumes normality of ROS data)	4.43E-04	95% Percentile Bootstrap UCL	4.43E-04
95% BCA Bootstrap UCL	4.43E-04	95% Bootstrap t UCL	4.43E-04
95% H-UCL (Log ROS)	4.43E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			

KM Mean (logged)	-7.89	95% H-UCL (KM -Log)	4.15E-04
KM SD (logged)	0.37	95% Critical H Value (KM-Log)	1.737
KM Standard Error of Mean (logged)	0.0792		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0157	Mean in Log Scale	-4.79
SD in Original Scale	0.02	SD in Log Scale	1.289
95% t UCL (Assumes normality)	0.0174	95% H-Stat UCL	0.0224
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	4.98E-04	95% KM (Percentile Bootstrap) UCL	5.10E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pesticides (ug/l)***sum ddd***sum_ddd***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	83
Number of Detects	118	Number of Non-Detects	244
Number of Distinct Detects	73	Number of Distinct Non-Detects	13
Minimum Detect	7.50E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0151	Maximum Non-Detect	1.30E-02
Variance Detects	4.32E-06	Percent Non-Detects	67.40%
Mean Detects	1.64E-03	SD Detects	2.08E-03
Median Detects	1.02E-03	CV Detects	1.27E+00
Skewness Detects	4.75E+00	Kurtosis Detects	24.75
Mean of Logged Detects	-6.681	SD of Logged Detects	0.574
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.414	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.335	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0816	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00114	Standard Error of Mean	6.94E-05
SD	0.00126	95% KM (BCA) UCL	0.00127
95% KM (t) UCL	1.26E-03	95% KM (Percentile Bootstrap) UCL	1.27E-03
95% KM (z) UCL	0.00126	95% KM Bootstrap t UCL	0.00131
90% KM Chebyshev UCL	0.00135	95% KM Chebyshev UCL	0.00144
97.5% KM Chebyshev UCL	0.00158	99% KM Chebyshev UCL	0.00183
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	15.1	Anderson-Darling GOF Test	
5% A-D Critical Value	0.765	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.251	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0859	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.036	k star (bias corrected MLE)	1.99
Theta hat (MLE)	8.03E-04	Theta star (bias corrected MLE)	8.22E-04
nu hat (MLE)	480.6	nu star (bias corrected)	469.7
MLE Mean (bias corrected)	0.00164	MLE Sd (bias corrected)	0.00116
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.815	nu hat (KM)	590.2
Approximate Chi Square Value (590.18, α)	534.8	Adjusted Chi Square Value (590.18, β)	534.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.00126	95% Gamma Adjusted KM-UCL (use when n<50)	0.00126
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.50E-04	Mean	0.00727
Maximum	1.51E-02	Median	0.01
SD	0.0041	CV	0.564
k hat (MLE)	1.54E+00	k star (bias corrected MLE)	1.53E+00
Theta hat (MLE)	4.72E-03	Theta star (bias corrected MLE)	4.75E-03
nu hat (MLE)	1.12E+03	nu star (bias corrected)	1108

MLE Mean (bias corrected)	0.00727	MLE Sd (bias corrected)	0.00588
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1032	Adjusted Chi Square Value (N/A, β)	1031
95% Gamma Approximate UCL (use when n>=50)	7.81E-03	95% Gamma Adjusted UCL (use when n<50)	0.00781
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.199	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0816	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00115	Mean in Log Scale	-6.947
SD in Original Scale	1.27E-03	SD in Log Scale	5.08E-01
95% t UCL (assumes normality of ROS data)	0.00126	95% Percentile Bootstrap UCL	0.00127
95% BCA Bootstrap UCL	0.0013	95% Bootstrap t UCL	0.0013
95% H-UCL (Log ROS)	0.00115		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00154	Mean in Log Scale	-6.862
SD in Original Scale	0.00184	SD in Log Scale	0.782
95% t UCL (Assumes normality)	0.0017	95% H-Stat UCL	0.00154
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.26E-03	95% KM (% Bootstrap) UCL	0.00127
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pesticides (ug/l)***sum dde***sum_dde***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	49
Number of Detects	69	Number of Non-Detects	293
Number of Distinct Detects	38	Number of Distinct Non-Detects	13
Minimum Detect	7.40E-04	Minimum Non-Detect	5.00E-04
Maximum Detect	0.028	Maximum Non-Detect	1.30E-02
Variance Detects	1.30E-05	Percent Non-Detects	80.94%
Mean Detects	1.74E-03	SD Detects	3.61E-03
Median Detects	8.60E-04	CV Detects	2.08E+00
Skewness Detects	6.18E+00	Kurtosis Detects	42.69
Mean of Logged Detects	-6.814	SD of Logged Detects	0.679
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.304	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.391	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.107	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.34E-04	Standard Error of Mean	8.90E-05
SD	0.00164	95% KM (BCA) UCL	0.00112
95% KM (t) UCL	1.08E-03	95% KM (Percentile Bootstrap) UCL	0.0011
95% KM (z) UCL	0.00108	95% KM Bootstrap t UCL	0.00127
90% KM Chebyshev UCL	0.0012	95% KM Chebyshev UCL	0.00132
97.5% KM Chebyshev UCL	0.00149	99% KM Chebyshev UCL	0.00182
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	14.71	Anderson-Darling GOF Test	
5% A-D Critical Value	0.775	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.375	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.11	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.23E+00	k star (bias corrected MLE)	1.185
Theta hat (MLE)	0.00142	Theta star (bias corrected MLE)	0.00147
nu hat (MLE)	169.6	nu star (bias corrected)	163.5
MLE Mean (bias corrected)	0.00174	MLE Sd (bias corrected)	0.0016
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.326	nu hat (KM)	235.9
Approximate Chi Square Value (235.93, α)	201.4	Adjusted Chi Square Value (235.93, β)	201.2

95% Gamma Approximate KM-UCL (use when n>=50)		0.00109	95% Gamma Adjusted KM-UCL (use when n<50)	0.00109
Gamma ROS Statistics using Imputed Non-Detects				
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs				
GROS may not be used when kstar of detected data is small such as < 0.1				
For such situations, GROS method tends to yield inflated values of UCLs and BTVs				
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates				
Minimum	7.40E-04	Mean		0.00843
Maximum	0.028	Median		0.01
SD	3.61E-03	CV		0.428
k hat (MLE)	2.155	k star (bias corrected MLE)		2.139
Theta hat (MLE)	3.91E-03	Theta star (bias corrected MLE)		3.94E-03
nu hat (MLE)	1.56E+03	nu star (bias corrected)		1.55E+03
MLE Mean (bias corrected)	8.43E-03	MLE Sd (bias corrected)		0.00576
		Adjusted Level of Significance (β)		0.0493
Approximate Chi Square Value (N/A, α)	1458	Adjusted Chi Square Value (N/A, β)		1458
95% Gamma Approximate UCL (use when n>=50)	0.00895	95% Gamma Adjusted UCL (use when n<50)		0.00895
Lognormal GOF Test on Detected Observations Only				
Lilliefors Test Statistic	3.26E-01	Lilliefors GOF Test		
5% Lilliefors Critical Value	0.107	Detected Data Not Lognormal at 5% Significance Level		
Detected Data Not Lognormal at 5% Significance Level				
Lognormal ROS Statistics Using Imputed Non-Detects				
Mean in Original Scale	9.38E-04	Mean in Log Scale		-7.237
SD in Original Scale	0.00165	SD in Log Scale		0.604
95% t UCL (assumes normality of ROS data)	1.08E-03	95% Percentile Bootstrap UCL		0.0011
95% BCA Bootstrap UCL	0.00118	95% Bootstrap t UCL		0.00128
95% H-UCL (Log ROS)	9.16E-04			
DL/2 Statistics				
DL/2 Normal		DL/2 Log-Transformed		
Mean in Original Scale	0.00141	Mean in Log Scale		-7.015
SD in Original Scale	0.00213	SD in Log Scale		0.81
95% t UCL (Assumes normality)	0.00159	95% H-Stat UCL		0.00136
DL/2 is not a recommended method, provided for comparisons and historical reasons				
Nonparametric Distribution Free UCL Statistics				
Data do not follow a Discernible Distribution at 5% Significance Level				
Suggested UCL to Use				
95% KM (t) UCL	1.08E-03	95% KM (% Bootstrap) UCL		0.11%
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.				
Recommendations are based upon data size, data distribution, and skewness.				
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).				
However, s for additional insight the user may want to consult a statistician.				
RESULT_VALUE (pesticides (ug/l)***sum ddt (u = 1/2)***sum_ddt_n***ug/l****t)				
General Statistics				
Total Number of Observations	362	Number of Distinct Observations		31
Number of Detects	22	Number of Non-Detects		340
Number of Distinct Detects	19	Number of Distinct Non-Detects		13
Minimum Detect	8.50E-04	Minimum Non-Detect		5.00E-04
Maximum Detect	8.70E-03	Maximum Non-Detect		1.30E-02
Variance Detects	3.44E-06	Percent Non-Detects		93.92%
Mean Detects	2.36E-03	SD Detects		1.85E-03
Median Detects	1.55E-03	CV Detects		7.88E-01
Skewness Detects	2.26E+00	Kurtosis Detects		5.83E+00
Mean of Logged Detects	-6.26E+00	SD of Logged Detects		6.11E-01
Normal GOF Test on Detects Only				
Shapiro Wilk Test Statistic	0.725	Shapiro Wilk GOF Test		
5% Shapiro Wilk Critical Value	0.911	Detected Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.279	Lilliefors GOF Test		
5% Lilliefors Critical Value	0.189	Detected Data Not Normal at 5% Significance Level		
Detected Data Not Normal at 5% Significance Level				
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs				
Mean	6.86E-04	Standard Error of Mean		4.71E-05
SD	6.75E-04	95% KM (BCA) UCL		7.65E-04
95% KM (t) UCL	7.64E-04	95% KM (Percentile Bootstrap) UCL		7.67E-04
95% KM (z) UCL	7.64E-04	95% KM Bootstrap t UCL		7.87E-04
90% KM Chebyshev UCL	8.27E-04	95% KM Chebyshev UCL		8.91E-04
97.5% KM Chebyshev UCL	9.80E-04	99% KM Chebyshev UCL		0.00115
Gamma GOF Tests on Detected Observations Only				
A-D Test Statistic	1.17E+00	Anderson-Darling GOF Test		
5% A-D Critical Value	0.752	Detected Data Not Gamma Distributed at 5% Significance Level		

K-S Test Statistic	0.235	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.187	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.59E+00	k star (bias corrected MLE)	2.265
Theta hat (MLE)	9.10E-04	Theta star (bias corrected MLE)	0.00104
nu hat (MLE)	113.8	nu star (bias corrected)	99.65
MLE Mean (bias corrected)	0.00236	MLE Sd (bias corrected)	0.00157
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.033	nu hat (KM)	747.7
Approximate Chi Square Value (747.70, α)	685.3	Adjusted Chi Square Value (747.70, β)	685
95% Gamma Approximate KM-UCL (use when n>=50)	7.49E-04	95% Gamma Adjusted KM-UCL (use when n<50)	7.49E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	8.50E-04	Mean	0.00954
Maximum	0.01	Median	0.01
SD	0.00188	CV	0.197
k hat (MLE)	9.635	k star (bias corrected MLE)	9.557
Theta hat (MLE)	9.90E-04	Theta star (bias corrected MLE)	9.98E-04
nu hat (MLE)	6.98E+03	nu star (bias corrected)	6920
MLE Mean (bias corrected)	9.54E-03	MLE Sd (bias corrected)	3.08E-03
		Adjusted Level of Significance (β)	4.93E-02
Approximate Chi Square Value (N/A, α)	6.73E+03	Adjusted Chi Square Value (N/A, β)	6727
95% Gamma Approximate UCL (use when n>=50)	0.00981	95% Gamma Adjusted UCL (use when n<50)	0.00981
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.914	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.911	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.207	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.189	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.98E-04	Mean in Log Scale	-8.55E+00
SD in Original Scale	7.19E-04	SD in Log Scale	1.181
95% t UCL (assumes normality of ROS data)	4.60E-04	95% Percentile Bootstrap UCL	4.63E-04
95% BCA Bootstrap UCL	4.78E-04	95% Bootstrap t UCL	4.79E-04
95% H-UCL (Log ROS)	4.48E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.43E+00	95% H-UCL (KM -Log)	6.74E-04
KM SD (logged)	4.16E-01	95% Critical H Value (KM-Log)	1.757
KM Standard Error of Mean (logged)	0.0449		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00133	Mean in Log Scale	-7.041
SD in Original Scale	0.00159	SD in Log Scale	0.808
95% t UCL (Assumes normality)	0.00147	95% H-Stat UCL	0.00132
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	7.64E-04	95% KM (% Bootstrap) UCL	7.67E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (pesticides (ug/l)***total chlordane (km) (rl)***tchlordane_km_ri***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	83
Number of Detects	95	Number of Non-Detects	267
Number of Distinct Detects	68	Number of Distinct Non-Detects	16
Minimum Detect	0.0022	Minimum Non-Detect	5.00E-04
Maximum Detect	0.056	Maximum Non-Detect	0.17
Variance Detects	3.28E-05	Percent Non-Detects	73.76%
Mean Detects	0.0121	SD Detects	5.73E-03
Median Detects	0.0122	CV Detects	0.472
Skewness Detects	4.603	Kurtosis Detects	36.87

Mean of Logged Detects	-4.51	SD of Logged Detects	0.488
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.596	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.266	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0909	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00942	Standard Error of Mean	5.08E-04
SD	0.0059	95% KM (BCA) UCL	0.0103
95% KM (t) UCL	0.0103	95% KM (Percentile Bootstrap) UCL	0.0103
95% KM (z) UCL	0.0103	95% KM Bootstrap t UCL	0.0102
90% KM Chebyshev UCL	0.0109	95% KM Chebyshev UCL	0.0116
97.5% KM Chebyshev UCL	0.0126	99% KM Chebyshev UCL	0.0145
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	10.99	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.293	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.092	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.269	k star (bias corrected MLE)	5.109
Theta hat (MLE)	0.0023	Theta star (bias corrected MLE)	0.00237
nu hat (MLE)	1.00E+03	nu star (bias corrected)	970.8
MLE Mean (bias corrected)	0.0121	MLE Sd (bias corrected)	0.00537
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.546	nu hat (KM)	1843
Approximate Chi Square Value (N/A, α)	1745	Adjusted Chi Square Value (N/A, β)	1744
95% Gamma Approximate KM-UCL (use when n>=50)	0.00995	95% Gamma Adjusted KM-UCL (use when n<50)	0.00995
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0022	Mean	0.0116
Maximum	0.056	Median	0.0104
SD	0.00359	CV	0.308
k hat (MLE)	12.86	k star (bias corrected MLE)	12.75
Theta hat (MLE)	9.05E-04	Theta star (bias corrected MLE)	9.12E-04
nu hat (MLE)	9308	nu star (bias corrected)	9233
MLE Mean (bias corrected)	0.0116	MLE Sd (bias corrected)	0.00326
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	9010	Adjusted Chi Square Value (N/A, β)	9009
95% Gamma Approximate UCL (use when n>=50)	0.0119	95% Gamma Adjusted UCL (use when n<50)	0.0119
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.327	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0909	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0101	Mean in Log Scale	-4.684
SD in Original Scale	0.0045	SD in Log Scale	0.434
95% t UCL (assumes normality of ROS data)	0.0105	95% Percentile Bootstrap UCL	0.0105
95% BCA Bootstrap UCL	0.0105	95% Bootstrap t UCL	0.0105
95% H-UCL (Log ROS)	0.0106		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0169	Mean in Log Scale	-4.62
SD in Original Scale	0.0197	SD in Log Scale	1.184
95% t UCL (Assumes normality)	0.0186	95% H-Stat UCL	0.0229
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.03E-02	95% KM (% Bootstrap) UCL	1.03E-02

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (pesticides (ug/l)***total ddx (km) (rl)***tddt_km_ri***ug/l***t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	119
Number of Detects	164	Number of Non-Detects	198
Number of Distinct Detects	101	Number of Distinct Non-Detects	20
Minimum Detect	0.0021	Minimum Non-Detect	5.00E-04
Maximum Detect	0.0487	Maximum Non-Detect	0.013
Variance Detects	3.32E-05	Percent Non-Detects	54.70%
Mean Detects	4.81E-03	SD Detects	5.76E-03
Median Detects	0.00349	CV Detects	1.20E+00
Skewness Detects	5.41E+00	Kurtosis Detects	3.13E+01
Mean of Logged Detects	-5.54E+00	SD of Logged Detects	0.465

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.321	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.387	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0692	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.00273	Standard Error of Mean	2.35E-04
SD	0.00439	95% KM (BCA) UCL	0.00313
95% KM (t) UCL	0.00312	95% KM (Percentile Bootstrap) UCL	0.00313
95% KM (z) UCL	0.00311	95% KM Bootstrap t UCL	0.00325
90% KM Chebyshev UCL	0.00343	95% KM Chebyshev UCL	0.00375
97.5% KM Chebyshev UCL	0.00419	99% KM Chebyshev UCL	0.00506

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	32.55	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	3.45E-01	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0736	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	2.684	k star (bias corrected MLE)	2.639
Theta hat (MLE)	0.00179	Theta star (bias corrected MLE)	0.00182
nu hat (MLE)	8.80E+02	nu star (bias corrected)	865.7
MLE Mean (bias corrected)	0.00481	MLE Sd (bias corrected)	0.00296

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.386	nu hat (KM)	279.4
Approximate Chi Square Value (279.45, α)	241.7	Adjusted Chi Square Value (279.45, β)	241.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00315	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00316

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0021	Mean	0.00765
Maximum	0.0487	Median	0.01
SD	0.00466	CV	0.609
k hat (MLE)	3.423	k star (bias corrected MLE)	3.397
Theta hat (MLE)	2.23E-03	Theta star (bias corrected MLE)	0.00225
nu hat (MLE)	2478	nu star (bias corrected)	2459
MLE Mean (bias corrected)	7.65E-03	MLE Sd (bias corrected)	4.15E-03
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2.35E+03	Adjusted Chi Square Value (N/A, β)	2345
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00802	95% Gamma Adjusted UCL (use when $n < 50$)	0.00802

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.293	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0692	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00323	Mean in Log Scale	-5.981
SD in Original Scale	0.00418	SD in Log Scale	0.599
95% t UCL (assumes normality of ROS data)	0.00359	95% Percentile Bootstrap UCL	0.00359
95% BCA Bootstrap UCL	0.00372	95% Bootstrap t UCL	0.00377
95% H-UCL (Log ROS)	3.21E-03		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0031	Mean in Log Scale	-6.246
SD in Original Scale	0.00438	SD in Log Scale	0.98

95% t UCL (Assumes normality)

0.00348

95% H-Stat UCL

0.00349

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL

0.00312

95% KM (% Bootstrap) UCL

0.00313

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l))***1-methyldibenzothiophene***31317-07-4***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	154
Number of Detects	177	Number of Non-Detects	185
Number of Distinct Detects	140	Number of Distinct Non-Detects	14
Minimum Detect	0.00142	Minimum Non-Detect	0.01
Maximum Detect	0.0133	Maximum Non-Detect	0.0114
Variance Detects	1.94E-06	Percent Non-Detects	51.10%
Mean Detects	0.00272	SD Detects	1.39E-03
Median Detects	0.00247	CV Detects	0.513
Skewness Detects	3.604	Kurtosis Detects	20.78
Mean of Logged Detects	-5.992	SD of Logged Detects	0.383

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic

0.723

Normal GOF Test on Detected Observations Only

5% Shapiro Wilk P Value

0

Detected Data Not Normal at 5% Significance Level

Lilliefors Test Statistic

0.177

Lilliefors GOF Test

5% Lilliefors Critical Value

0.0666

Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00269	Standard Error of Mean	9.09E-05
SD	0.00127	95% KM (BCA) UCL	0.00285
95% KM (t) UCL	0.00284	95% KM (Percentile Bootstrap) UCL	0.00284
95% KM (z) UCL	2.84E-03	95% KM Bootstrap t UCL	2.86E-03
90% KM Chebyshev UCL	0.00296	95% KM Chebyshev UCL	0.00308
97.5% KM Chebyshev UCL	0.00325	99% KM Chebyshev UCL	0.00359

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic

3.93

Anderson-Darling GOF Test

5% A-D Critical Value

0.755

Detected Data Not Gamma Distributed at 5% Significance Level

K-S Test Statistic

0.105

Kolmogrov-Smirnoff GOF

5% K-S Critical Value

0.0697

Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only			
k hat (MLE)	6.094	k star (bias corrected MLE)	5.994
Theta hat (MLE)	4.46E-04	Theta star (bias corrected MLE)	4.53E-04
nu hat (MLE)	2157	nu star (bias corrected)	2122
MLE Mean (bias corrected)	0.00272	MLE Sd (bias corrected)	0.00111

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	4.487	nu hat (KM)	3248
Approximate Chi Square Value (N/A, α)	3117	Adjusted Chi Square Value (N/A, β)	3117
95% Gamma Approximate KM-UCL (use when n>=50)	0.0028	95% Gamma Adjusted KM-UCL (use when n<50)	0.0028

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum

0.00142

Mean

0.00644

Maximum

0.0133

Median

0.01

SD

0.00377

CV

0.586

k hat (MLE)

2.252

k star (bias corrected MLE)

2.236

Theta hat (MLE)

0.00286

Theta star (bias corrected MLE)

0.00288

nu hat (MLE)

1631

nu star (bias corrected)

1619

MLE Mean (bias corrected)

0.00644

MLE Sd (bias corrected)

0.00431

Adjusted Level of Significance (β)

0.0493

Approximate Chi Square Value (N/A, α)

1526

Adjusted Chi Square Value (N/A, β)

1526

95% Gamma Approximate UCL (use when n>=50)

0.00683

95% Gamma Adjusted UCL (use when n<50)

0.00683

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic

0.0732

Lilliefors GOF Test

5% Lilliefors Critical Value

0.0666

Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00266	Mean in Log Scale	-5.995
SD in Original Scale	0.00114	SD in Log Scale	0.35
95% t UCL (assumes normality of ROS data)	0.00276	95% Percentile Bootstrap UCL	0.00276
95% BCA Bootstrap UCL	0.00277	95% Bootstrap t UCL	0.00278
95% H-UCL (Log ROS)	0.00273		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00399	Mean in Log Scale	-5.617
SD in Original Scale	0.00159	SD in Log Scale	0.455
95% t UCL (Assumes normality)	0.00413	95% H-Stat UCL	0.00421

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.00284	95% KM (% Bootstrap) UCL	0.00284
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***1-methylnaphthalene***90-12-0***ug/l***t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	178
Number of Detects	193	Number of Non-Detects	169
Number of Distinct Detects	170	Number of Distinct Non-Detects	13
Minimum Detect	0.00165	Minimum Non-Detect	0.01
Maximum Detect	0.11	Maximum Non-Detect	0.0116
Variance Detects	2.93E-04	Percent Non-Detects	46.69%
Mean Detects	0.012	SD Detects	1.71E-02
Median Detects	0.00509	CV Detects	1.431
Skewness Detects	3.097	Kurtosis Detects	11.44
Mean of Logged Detects	-5.061	SD of Logged Detects	1.06

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.62	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.273	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0638	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.0082	Standard Error of Mean	7.05E-04
SD	0.0132	95% KM (BCA) UCL	0.00939
95% KM (t) UCL	0.00936	95% KM (Percentile Bootstrap) UCL	0.00936
95% KM (z) UCL	0.00936	95% KM Bootstrap t UCL	0.00954
90% KM Chebyshev UCL	0.0103	95% KM Chebyshev UCL	0.0113
97.5% KM Chebyshev UCL	0.0126	99% KM Chebyshev UCL	0.0152

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	8.675	Anderson-Darling GOF Test	
5% A-D Critical Value	0.788	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.17	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0676	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.918	k star (bias corrected MLE)	0.907
Theta hat (MLE)	0.013	Theta star (bias corrected MLE)	0.0132
nu hat (MLE)	354.4	nu star (bias corrected)	350.2
MLE Mean (bias corrected)	0.012	MLE Sd (bias corrected)	0.0126

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.386	nu hat (KM)	279.5
Approximate Chi Square Value (279.52, α)	241.8	Adjusted Chi Square Value (279.52, β)	241.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.00948	95% Gamma Adjusted KM-UCL (use when n<50)	0.00948

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.00165	Mean	0.0112
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Maximum	0.11	Median	0.01
SD	0.0125	CV	1.118
k hat (MLE)	1.603	k star (bias corrected MLE)	1.591
Theta hat (MLE)	0.007	Theta star (bias corrected MLE)	0.00705
nu hat (MLE)	1160	nu star (bias corrected)	1152
MLE Mean (bias corrected)	0.0112	MLE Sd (bias corrected)	0.00889
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1074	Adjusted Chi Square Value (N/A, β)	1074
95% Gamma Approximate UCL (use when n>=50)	0.012	95% Gamma Adjusted UCL (use when n<50)	0.012
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.109	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0638	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00849	Mean in Log Scale	-5.307
SD in Original Scale	0.0132	SD in Log Scale	0.928
95% t UCL (assumes normality of ROS data)	0.00963	95% Percentile Bootstrap UCL	0.00967
95% BCA Bootstrap UCL	0.00981	95% Bootstrap t UCL	0.00997
95% H-UCL (Log ROS)	0.00844		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00881	Mean in Log Scale	-5.153
SD in Original Scale	0.0129	SD in Log Scale	0.78
95% t UCL (Assumes normality)	0.00993	95% H-Stat UCL	0.00849
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.0113		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***1-methylphenanthrene***832-69-9***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	90
Number of Detects	80	Number of Non-Detects	282
Number of Distinct Detects	75	Number of Distinct Non-Detects	16
Minimum Detect	0.00147	Minimum Non-Detect	0.01
Maximum Detect	0.0465	Maximum Non-Detect	0.0116
Variance Detects	3.58E-05	Percent Non-Detects	77.90%
Mean Detects	0.0065	SD Detects	5.98E-03
Median Detects	0.0049	CV Detects	0.921
Skewness Detects	4.386	Kurtosis Detects	25.59
Mean of Logged Detects	-5.251	SD of Logged Detects	0.608
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.602	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.248	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0991	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00528	Standard Error of Mean	2.70E-04
SD	0.00336	95% KM (BCA) UCL	0.00573
95% KM (t) UCL	0.00573	95% KM (Percentile Bootstrap) UCL	0.00572
95% KM (z) UCL	0.00573	95% KM Bootstrap t UCL	0.00577
90% KM Chebyshev UCL	0.00609	95% KM Chebyshev UCL	0.00646
97.5% KM Chebyshev UCL	0.00697	99% KM Chebyshev UCL	0.00797
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.158	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.177	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.101	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.477	k star (bias corrected MLE)	2.392
Theta hat (MLE)	0.00262	Theta star (bias corrected MLE)	0.00272
nu hat (MLE)	396.3	nu star (bias corrected)	382.7

MLE Mean (bias corrected)	0.0065	MLE Sd (bias corrected)	0.0042
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.477	nu hat (KM)	1793
Approximate Chi Square Value (N/A, α)	1696	Adjusted Chi Square Value (N/A, β)	1695
95% Gamma Approximate KM-UCL (use when n>=50)	0.00559	95% Gamma Adjusted KM-UCL (use when n<50)	0.00559
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00147	Mean	0.00932
Maximum	0.0465	Median	0.01
SD	0.00321	CV	0.344
k hat (MLE)	8	k star (bias corrected MLE)	7.935
Theta hat (MLE)	0.00116	Theta star (bias corrected MLE)	0.00117
nu hat (MLE)	5792	nu star (bias corrected)	5745
MLE Mean (bias corrected)	0.00932	MLE Sd (bias corrected)	0.00331
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	5570	Adjusted Chi Square Value (N/A, β)	5569
95% Gamma Approximate UCL (use when n>=50)	0.00961	95% Gamma Adjusted UCL (use when n<50)	0.00961
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.136	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0991	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00537	Mean in Log Scale	-5.353
SD in Original Scale	0.00345	SD in Log Scale	0.483
95% t UCL (assumes normality of ROS data)	0.00567	95% Percentile Bootstrap UCL	0.00569
95% BCA Bootstrap UCL	0.00573	95% Bootstrap t UCL	0.00576
95% H-UCL (Log ROS)	0.00556		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0055	Mean in Log Scale	-5.254
SD in Original Scale	0.00285	SD in Log Scale	0.286
95% t UCL (Assumes normality)	0.00575	95% H-Stat UCL	0.00558
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00573	95% KM (% Bootstrap) UCL	0.00572
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***2,3,5-trimethylnaphthalene (1,6,7-trimethylnaphthalene)***2245-38-7***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	109
Number of Detects	106	Number of Non-Detects	256
Number of Distinct Detects	97	Number of Distinct Non-Detects	14
Minimum Detect	0.00191	Minimum Non-Detect	0.01
Maximum Detect	0.0261	Maximum Non-Detect	0.0116
Variance Detects	2.34E-05	Percent Non-Detects	70.72%
Mean Detects	0.00629	SD Detects	4.84E-03
Median Detects	0.00446	CV Detects	0.769
Skewness Detects	2.114	Kurtosis Detects	4.735
Mean of Logged Detects	-5.278	SD of Logged Detects	0.613
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.751	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.234	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0861	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00515	Standard Error of Mean	2.49E-04
SD	0.00323	95% KM (BCA) UCL	0.00555
95% KM (t) UCL	0.00556	95% KM (Percentile Bootstrap) UCL	0.00558
95% KM (z) UCL	0.00556	95% KM Bootstrap t UCL	0.00559
90% KM Chebyshev UCL	0.0059	95% KM Chebyshev UCL	0.00624

97.5% KM Chebyshev UCL	0.0067	99% KM Chebyshev UCL	0.00763
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.269	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.174	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0888	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.542	k star (bias corrected MLE)	2.476
Theta hat (MLE)	0.00248	Theta star (bias corrected MLE)	0.00254
nu hat (MLE)	538.9	nu star (bias corrected)	525
MLE Mean (bias corrected)	0.00629	MLE Sd (bias corrected)	0.004
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.538	nu hat (KM)	1837
Approximate Chi Square Value (N/A, α)	1739	Adjusted Chi Square Value (N/A, β)	1738
95% Gamma Approximate KM-UCL (use when n \geq 50)	0.00544	95% Gamma Adjusted KM-UCL (use when n<50)	0.00544
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00191	Mean	0.00894
Maximum	0.0261	Median	0.01
SD	0.00312	CV	0.349
k hat (MLE)	6.227	k star (bias corrected MLE)	6.177
Theta hat (MLE)	0.00144	Theta star (bias corrected MLE)	0.00145
nu hat (MLE)	4508	nu star (bias corrected)	4472
MLE Mean (bias corrected)	0.00894	MLE Sd (bias corrected)	0.0036
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	4318	Adjusted Chi Square Value (N/A, β)	4317
95% Gamma Approximate UCL (use when n \geq 50)	0.00926	95% Gamma Adjusted UCL (use when n<50)	0.00926
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.129	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0861	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00522	Mean in Log Scale	-5.391
SD in Original Scale	0.0032	SD in Log Scale	0.5
95% t UCL (assumes normality of ROS data)	0.00549	95% Percentile Bootstrap UCL	0.00548
95% BCA Bootstrap UCL	0.00552	95% Bootstrap t UCL	0.00552
95% H-UCL (Log ROS)	0.00541		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00553	Mean in Log Scale	-5.263
SD in Original Scale	0.00266	SD in Log Scale	0.332
95% t UCL (Assumes normality)	0.00576	95% H-Stat UCL	0.00564
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00556	95% KM (% Bootstrap) UCL	0.00558
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***2,6-dimethylnaphthalene***581-42-0***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	156
Number of Detects	158	Number of Non-Detects	204
Number of Distinct Detects	149	Number of Distinct Non-Detects	12
Minimum Detect	0.00277	Minimum Non-Detect	0.01
Maximum Detect	0.172	Maximum Non-Detect	0.0112
Variance Detects	4.48E-04	Percent Non-Detects	56.35%
Mean Detects	0.0165	SD Detects	2.12E-02
Median Detects	0.00947	CV Detects	1.282
Skewness Detects	3.907	Kurtosis Detects	20.89
Mean of Logged Detects	-4.555	SD of Logged Detects	0.89

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.615	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.258	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0705	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0104	Standard Error of Mean 8.08E-04
SD	0.015	95% KM (BCA) UCL 0.0118
95% KM (t) UCL	0.0117	95% KM (Percentile Bootstrap) UCL 0.0117
95% KM (z) UCL	0.0117	95% KM Bootstrap t UCL 0.012
90% KM Chebyshev UCL	0.0128	95% KM Chebyshev UCL 0.0139
97.5% KM Chebyshev UCL	0.0154	99% KM Chebyshev UCL 0.0184
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.537	Anderson-Darling GOF Test
5% A-D Critical Value	0.777	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.112	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0763	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.248	k star (bias corrected MLE) 1.228
Theta hat (MLE)	0.0132	Theta star (bias corrected MLE) 0.0134
nu hat (MLE)	394.3	nu star (bias corrected) 388.2
MLE Mean (bias corrected)	0.0165	MLE Sd (bias corrected) 0.0149
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.476	nu hat (KM) 344.3
Approximate Chi Square Value (344.28, α)	302.3	Adjusted Chi Square Value (344.28, β) 302.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.0118	95% Gamma Adjusted KM-UCL (use when n<50) 0.0118
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00277	Mean 0.0131
Maximum	0.172	Median 0.01
SD	0.0143	CV 1.091
k hat (MLE)	2.361	k star (bias corrected MLE) 2.344
Theta hat (MLE)	0.00556	Theta star (bias corrected MLE) 0.0056
nu hat (MLE)	1710	nu star (bias corrected) 1697
MLE Mean (bias corrected)	0.0131	MLE Sd (bias corrected) 0.00857
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1602	Adjusted Chi Square Value (N/A, β) 1602
95% Gamma Approximate UCL (use when n>=50)	0.0139	95% Gamma Adjusted UCL (use when n<50) 0.0139
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0779	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0705	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0108	Mean in Log Scale -4.917
SD in Original Scale	0.015	SD in Log Scale 0.782
95% t UCL (assumes normality of ROS data)	0.0121	95% Percentile Bootstrap UCL 0.0121
95% BCA Bootstrap UCL	0.0124	95% Bootstrap t UCL 0.0124
95% H-UCL (Log ROS)	0.0108	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.0101	Mean in Log Scale -4.951
SD in Original Scale	0.0151	SD in Log Scale 0.683
95% t UCL (Assumes normality)	0.0115	95% H-Stat UCL 0.00957
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.0117	95% KM (% Bootstrap) UCL 0.0117

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***2-methylanthracene***613-12-7***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 56
Number of Detects	45	Number of Non-Detects 317
Number of Distinct Detects	41	Number of Distinct Non-Detects 16
Minimum Detect	0.0013	Minimum Non-Detect 0.01
Maximum Detect	0.0111	Maximum Non-Detect 0.0116
Variance Detects	4.23E-06	Percent Non-Detects 87.57%
Mean Detects	0.00366	SD Detects 2.06E-03
Median Detects	0.00305	CV Detects 0.562
Skewness Detects	1.782	Kurtosis Detects 3.578
Mean of Logged Detects	-5.734	SD of Logged Detects 0.492
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.828	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.945	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.209	Lilliefors GOF Test
5% Lilliefors Critical Value	0.132	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00352	Standard Error of Mean 2.62E-04
SD	0.00176	95% KM (BCA) UCL 0.00399
95% KM (t) UCL	0.00395	95% KM (Percentile Bootstrap) UCL 0.00395
95% KM (z) UCL	3.95E-03	95% KM Bootstrap t UCL 4.05E-03
90% KM Chebyshev UCL	0.0043	95% KM Chebyshev UCL 0.00466
97.5% KM Chebyshev UCL	0.00515	99% KM Chebyshev UCL 0.00612
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.005	Anderson-Darling GOF Test
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.139	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.132	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	4.161	k star (bias corrected MLE) 3.899
Theta hat (MLE)	8.80E-04	Theta star (bias corrected MLE) 9.40E-04
nu hat (MLE)	374.5	nu star (bias corrected) 350.9
MLE Mean (bias corrected)	0.00366	MLE Sd (bias corrected) 0.00186
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	3.987	nu hat (KM) 2886
Approximate Chi Square Value (N/A, α)	2762	Adjusted Chi Square Value (N/A, β) 2762
95% Gamma Approximate KM-UCL (use when n>=50)	0.00367	95% Gamma Adjusted KM-UCL (use when n<50) 0.00367
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0013	Mean 0.00921
Maximum	0.0111	Median 0.01
SD	0.00221	CV 0.24
k hat (MLE)	8.738	k star (bias corrected MLE) 8.668
Theta hat (MLE)	0.00105	Theta star (bias corrected MLE) 0.00106
nu hat (MLE)	6327	nu star (bias corrected) 6276
MLE Mean (bias corrected)	0.00921	MLE Sd (bias corrected) 0.00313
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	6092	Adjusted Chi Square Value (N/A, β) 6092
95% Gamma Approximate UCL (use when n>=50)	0.00949	95% Gamma Adjusted UCL (use when n<50) 0.00949
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.945	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.107	Lilliefors GOF Test
5% Lilliefors Critical Value	0.132	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00345	Mean in Log Scale -5.762
SD in Original Scale	0.00155	SD in Log Scale 0.431
95% t UCL (assumes normality of ROS data)	0.00359	95% Percentile Bootstrap UCL 0.00358
95% BCA Bootstrap UCL	0.00359	95% Bootstrap t UCL 0.00359
95% H-UCL (Log ROS)	0.00359	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-5.759	95% H-UCL (KM -Log) 0.00366
KM SD (logged)	0.459	95% Critical H Value (KM-Log) 1.775
KM Standard Error of Mean (logged)	0.0692	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.00503	Mean in Log Scale -5.315
SD in Original Scale	8.96E-04	SD in Log Scale 0.235
95% t UCL (Assumes normality)	0.0051	95% H-Stat UCL 0.00516
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	0.00395	95% KM (% Bootstrap) UCL 0.00395

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l))***2-methyldibenzothiophene & 3-methyldibenzothiophene***mdbzthphn2_3***ug/l***t

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 56
Number of Detects	43	Number of Non-Detects 319
Number of Distinct Detects	40	Number of Distinct Non-Detects 16
Minimum Detect	0.00161	Minimum Non-Detect 0.01
Maximum Detect	0.112	Maximum Non-Detect 0.0116
Variance Detects	5.30E-04	Percent Non-Detects 88.12%
Mean Detects	0.00825	SD Detects 2.30E-02
Median Detects	0.00245	CV Detects 2.79
Skewness Detects	4.361	Kurtosis Detects 18.15
Mean of Logged Detects	-5.72	SD of Logged Detects 0.922

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.292	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.943	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.446	Lilliefors GOF Test
5% Lilliefors Critical Value	0.135	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00351	Standard Error of Mean 4.88E-04
SD	0.00816	95% KM (BCA) UCL 0.00445
95% KM (t) UCL	0.00432	95% KM (Percentile Bootstrap) UCL 0.00438
95% KM (z) UCL	0.00432	95% KM Bootstrap t UCL 0.00523
90% KM Chebyshev UCL	0.00498	95% KM Chebyshev UCL 0.00564
97.5% KM Chebyshev UCL	0.00656	99% KM Chebyshev UCL 0.00837

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	9.225	Anderson-Darling GOF Test
5% A-D Critical Value	0.798	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.382	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.141	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.66	k star (bias corrected MLE) 0.63
Theta hat (MLE)	0.0125	Theta star (bias corrected MLE) 0.0131
nu hat (MLE)	56.78	nu star (bias corrected) 54.15
MLE Mean (bias corrected)	0.00825	MLE Sd (bias corrected) 0.0104

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.186	nu hat (KM) 134.3
Approximate Chi Square Value (134.31, α)	108.5	Adjusted Chi Square Value (134.31, β) 108.4
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00435	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.00435

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00161	Mean 0.0115
Maximum	0.112	Median 0.01
SD	0.00926	CV 0.808
k hat (MLE)	3.209	k star (bias corrected MLE) 3.184
Theta hat (MLE)	0.00357	Theta star (bias corrected MLE) 0.0036
nu hat (MLE)	2323	nu star (bias corrected) 2305
MLE Mean (bias corrected)	0.0115	MLE Sd (bias corrected) 0.00643
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2195	Adjusted Chi Square Value (N/A, β) 2194

95% Gamma Approximate UCL (use when n>=50)	0.012	95% Gamma Adjusted UCL (use when n<50)	0.0121
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.64	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.248	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.135	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00403	Mean in Log Scale	-5.835
SD in Original Scale	0.00826	SD in Log Scale	0.661
95% t UCL (assumes normality of ROS data)	0.00475	95% Percentile Bootstrap UCL	0.00479
95% BCA Bootstrap UCL	0.00519	95% Bootstrap t UCL	0.00648
95% H-UCL (Log ROS)	0.00388		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00558	Mean in Log Scale	-5.312
SD in Original Scale	0.00792	SD in Log Scale	0.35
95% t UCL (Assumes normality)	0.00626	95% H-Stat UCL	0.00541
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00432	95% KM (% Bootstrap) UCL	0.00438
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***2-methylnaphthalene***91-57-6***ug/l****)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	212
Number of Detects	257	Number of Non-Detects	105
Number of Distinct Detects	204	Number of Distinct Non-Detects	13
Minimum Detect	0.00134	Minimum Non-Detect	0.01
Maximum Detect	0.129	Maximum Non-Detect	0.0116
Variance Detects	2.39E-04	Percent Non-Detects	29.01%
Mean Detects	0.00862	SD Detects	0.0155
Median Detects	0.00364	CV Detects	1.79E+00
Skewness Detects	5.157	Kurtosis Detects	32.44
Mean of Logged Detects	-5.352	SD of Logged Detects	0.937
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.46	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.319	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0553	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0072	Standard Error of Mean	7.01E-04
SD	0.0132	95% KM (BCA) UCL	0.00839
95% KM (t) UCL	0.00836	95% KM (Percentile Bootstrap) UCL	0.00842
95% KM (z) UCL	0.00836	95% KM Bootstrap t UCL	0.00874
90% KM Chebyshev UCL	0.00931	95% KM Chebyshev UCL	0.0103
97.5% KM Chebyshev UCL	0.0116	99% KM Chebyshev UCL	0.0142
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	17.8	Anderson-Darling GOF Test	
5% A-D Critical Value	0.786	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.196	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0588	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.968	k star (bias corrected MLE)	0.959
Theta hat (MLE)	0.0089	Theta star (bias corrected MLE)	0.00898
nu hat (MLE)	497.6	nu star (bias corrected)	493.1
MLE Mean (bias corrected)	0.00862	MLE Sd (bias corrected)	0.0088
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.296	nu hat (KM)	214.6
Approximate Chi Square Value (214.58, α)	181.7	Adjusted Chi Square Value (214.58, β)	181.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.00851	95% Gamma Adjusted KM-UCL (use when n<50)	0.00851

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00134 Mean	0.00912
Maximum	0.129 Median	0.00636
SD	0.0131 CV	1.43
k hat (MLE)	1.305 k star (bias corrected MLE)	1.296
Theta hat (MLE)	0.00699 Theta star (bias corrected MLE)	0.00704
nu hat (MLE)	944.5 nu star (bias corrected)	938
MLE Mean (bias corrected)	0.00912 MLE Sd (bias corrected)	0.00802
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (938.01, α)	867.9 Adjusted Chi Square Value (938.01, β)	867.7
95% Gamma Approximate UCL (use when n>=50)	0.00986 95% Gamma Adjusted UCL (use when n<50)	0.00986
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.129 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0553 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00733 Mean in Log Scale	-5.433
SD in Original Scale	0.0132 SD in Log Scale	0.856
95% t UCL (assumes normality of ROS data)	0.00847 95% Percentile Bootstrap UCL	0.00854
95% BCA Bootstrap UCL	0.00881 95% Bootstrap t UCL	0.00884
95% H-UCL (Log ROS)	0.0069	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.00763 Mean in Log Scale	-5.325
SD in Original Scale	0.0131 SD in Log Scale	0.79
95% t UCL (Assumes normality)	0.00877 95% H-Stat UCL	0.00722
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.00839	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***2-methylphenanthrene & 4-methylphenanthrene***mphanthrn2_4***ug/l***t)		
General Statistics		
Total Number of Observations	82 Number of Distinct Observations	49
Number of Detects	37 Number of Non-Detects	45
Number of Distinct Detects	37 Number of Distinct Non-Detects	12
Minimum Detect	0.00272 Minimum Non-Detect	0.01
Maximum Detect	0.0226 Maximum Non-Detect	0.0116
Variance Detects	1.72E-05 Percent Non-Detects	54.88%
Mean Detects	0.00555 SD Detects	0.00415
Median Detects	0.00425 CV Detects	7.48E-01
Skewness Detects	3.367 Kurtosis Detects	11.65
Mean of Logged Detects	-5.333 SD of Logged Detects	0.462
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.553 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.936 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.146 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00505 Standard Error of Mean	3.84E-04
SD	0.003 95% KM (BCA) UCL	0.00575
95% KM (t) UCL	0.00569 95% KM (Percentile Bootstrap) UCL	0.00571
95% KM (z) UCL	0.00568 95% KM Bootstrap t UCL	0.00588
90% KM Chebyshev UCL	0.0062 95% KM Chebyshev UCL	0.00672
97.5% KM Chebyshev UCL	0.00745 99% KM Chebyshev UCL	0.00887
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.973 Anderson-Darling GOF Test	
5% A-D Critical Value	0.753 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.21 Kolmogrov-Smirnoff GOF	

5% K-S Critical Value	0.146	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.751	k star (bias corrected MLE) 3.465
Theta hat (MLE)	0.00148	Theta star (bias corrected MLE) 0.0016
nu hat (MLE)	277.6	nu star (bias corrected) 256.4
MLE Mean (bias corrected)	0.00555	MLE Sd (bias corrected) 0.00298
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.839	nu hat (KM) 465.5
Approximate Chi Square Value (465.54, α)	416.5	Adjusted Chi Square Value (465.54, β) 415.7
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00564	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.00566
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00272	Mean 0.00799
Maximum	0.0226	Median 0.01
SD	0.00355	CV 0.444
k hat (MLE)	4.954	k star (bias corrected MLE) 4.781
Theta hat (MLE)	0.00161	Theta star (bias corrected MLE) 0.00167
nu hat (MLE)	812.5	nu star (bias corrected) 784.1
MLE Mean (bias corrected)	0.00799	MLE Sd (bias corrected) 0.00366
		Adjusted Level of Significance (β) 0.0471
Approximate Chi Square Value (784.13, α)	720.1	Adjusted Chi Square Value (784.13, β) 719.1
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0087	95% Gamma Adjusted UCL (use when $n < 50$) 0.00872
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.82	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.936	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.16	Lilliefors GOF Test
5% Lilliefors Critical Value	0.146	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00512	Mean in Log Scale -5.359
SD in Original Scale	0.00295	SD in Log Scale 0.367
95% t UCL (assumes normality of ROS data)	0.00566	95% Percentile Bootstrap UCL 0.00571
95% BCA Bootstrap UCL	0.00593	95% Bootstrap t UCL 0.00614
95% H-UCL (Log ROS)	0.00541	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00539	Mean in Log Scale -5.287
SD in Original Scale	0.00278	SD in Log Scale 0.312
95% t UCL (Assumes normality)	0.0059	95% H-Stat UCL 0.00564
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.00569	95% KM (% Bootstrap) UCL 0.00571
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l))***2-methylphenanthrene***2531-84-2***ug/l***t)		
General Statistics		
Total Number of Observations	280	Number of Distinct Observations 88
Number of Detects	82	Number of Non-Detects 198
Number of Distinct Detects	78	Number of Distinct Non-Detects 12
Minimum Detect	0.00153	Minimum Non-Detect 0.01
Maximum Detect	0.0668	Maximum Non-Detect 0.0112
Variance Detects	1.12E-04	Percent Non-Detects 70.71%
Mean Detects	0.00777	SD Detects 0.0106
Median Detects	0.00461	CV Detects 1.36E+00
Skewness Detects	4.019	Kurtosis Detects 17.81
Mean of Logged Detects	-5.226	SD of Logged Detects 0.725
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.5	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.298	Lilliefors GOF Test

5% Lilliefors Critical Value	0.0978	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00552	Standard Error of Mean	4.08E-04
SD	0.00607	95% KM (BCA) UCL	0.00627
95% KM (t) UCL	0.00619	95% KM (Percentile Bootstrap) UCL	0.00616
95% KM (z) UCL	0.00619	95% KM Bootstrap t UCL	0.00642
90% KM Chebyshev UCL	0.00674	95% KM Chebyshev UCL	0.0073
97.5% KM Chebyshev UCL	0.00806	99% KM Chebyshev UCL	0.00958
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.501	Anderson-Darling GOF Test	
5% A-D Critical Value	0.771	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.216	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.1	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.499	k star (bias corrected MLE)	1.453
Theta hat (MLE)	0.00519	Theta star (bias corrected MLE)	0.00535
nu hat (MLE)	245.9	nu star (bias corrected)	238.2
MLE Mean (bias corrected)	0.00777	MLE Sd (bias corrected)	0.00645
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.826	nu hat (KM)	462.7
Approximate Chi Square Value (462.72, α)	413.8	Adjusted Chi Square Value (462.72, β)	413.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00617	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00617
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00153	Mean	0.00965
Maximum	0.0668	Median	0.01
SD	0.00592	CV	0.613
k hat (MLE)	4.297	k star (bias corrected MLE)	4.253
Theta hat (MLE)	0.00225	Theta star (bias corrected MLE)	0.00227
nu hat (MLE)	2406	nu star (bias corrected)	2382
MLE Mean (bias corrected)	0.00965	MLE Sd (bias corrected)	0.00468
		Adjusted Level of Significance (β)	0.0491
Approximate Chi Square Value (N/A, α)	2269	Adjusted Chi Square Value (N/A, β)	2269
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0101	95% Gamma Adjusted UCL (use when $n < 50$)	0.0101
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.153	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0978	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00581	Mean in Log Scale	-5.357
SD in Original Scale	0.00616	SD in Log Scale	0.572
95% t UCL (assumes normality of ROS data)	0.00642	95% Percentile Bootstrap UCL	0.00645
95% BCA Bootstrap UCL	0.0066	95% Bootstrap t UCL	0.00676
95% H-UCL (Log ROS)	0.00591		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00596	Mean in Log Scale	-5.248
SD in Original Scale	0.00582	SD in Log Scale	0.392
95% t UCL (Assumes normality)	0.00654	95% H-Stat UCL	0.00591
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00619	95% KM (% Bootstrap) UCL	0.00616
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***4-methyldibenzothiophene***7372-88-5***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	178
Number of Detects	205	Number of Non-Detects	157

Number of Distinct Detects	165	Number of Distinct Non-Detects	13
Minimum Detect	0.00146	Minimum Non-Detect	0.01
Maximum Detect	0.0211	Maximum Non-Detect	0.0114
Variance Detects	6.60E-06	Percent Non-Detects	43.37%
Mean Detects	0.00363	SD Detects	0.00257
Median Detects	0.00272	CV Detects	7.07E-01
Skewness Detects	3.362	Kurtosis Detects	16.83
Mean of Logged Detects	-5.774	SD of Logged Detects	0.521
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.705	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.199	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0619	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00354	Standard Error of Mean	1.47E-04
SD	0.00228	95% KM (BCA) UCL	0.00378
95% KM (t) UCL	0.00378	95% KM (Percentile Bootstrap) UCL	0.00379
95% KM (z) UCL	0.00378	95% KM Bootstrap t UCL	0.00381
90% KM Chebyshev UCL	0.00398	95% KM Chebyshev UCL	0.00418
97.5% KM Chebyshev UCL	0.00446	99% KM Chebyshev UCL	0.005
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.227	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.137	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0634	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.354	k star (bias corrected MLE)	3.308
Theta hat (MLE)	0.00108	Theta star (bias corrected MLE)	0.0011
nu hat (MLE)	1375	nu star (bias corrected)	1356
MLE Mean (bias corrected)	0.00363	MLE Sd (bias corrected)	0.002
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.418	nu hat (KM)	1751
Approximate Chi Square Value (N/A, α)	1654	Adjusted Chi Square Value (N/A, β)	1654
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00375	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00375
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00146	Mean	0.00639
Maximum	0.0211	Median	0.00605
SD	0.0037	CV	0.579
k hat (MLE)	2.482	k star (bias corrected MLE)	2.463
Theta hat (MLE)	0.00258	Theta star (bias corrected MLE)	0.0026
nu hat (MLE)	1797	nu star (bias corrected)	1783
MLE Mean (bias corrected)	0.00639	MLE Sd (bias corrected)	0.00407
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1686	Adjusted Chi Square Value (N/A, β)	1686
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00676	95% Gamma Adjusted UCL (use when $n < 50$)	0.00676
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.11	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0619	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0035	Mean in Log Scale	-5.782
SD in Original Scale	0.00214	SD in Log Scale	0.479
95% t UCL (assumes normality of ROS data)	0.00369	95% Percentile Bootstrap UCL	0.00369
95% BCA Bootstrap UCL	0.0037	95% Bootstrap t UCL	0.00371
95% H-UCL (Log ROS)	0.00362		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00432	Mean in Log Scale	-5.55
SD in Original Scale	0.00209	SD in Log Scale	0.468
95% t UCL (Assumes normality)	0.0045	95% H-Stat UCL	0.00453
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (t) UCL	0.00378 95% KM (% Bootstrap) UCL	0.00379
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***4-methylphenanthrene & 9-methylphenanthrene***mphnanthrn4_9***ug/l***t)		
General Statistics		
Total Number of Observations	280	Number of Distinct Observations 124
Number of Detects	136	Number of Non-Detects 144
Number of Distinct Detects	115	Number of Distinct Non-Detects 12
Minimum Detect	0.00179	Minimum Non-Detect 0.01
Maximum Detect	0.039	Maximum Non-Detect 0.0112
Variance Detects	2.32E-05	Percent Non-Detects 51.43%
Mean Detects	0.00567	SD Detects 0.00482
Median Detects	0.00397	CV Detects 8.50E-01
Skewness Detects	3.584	Kurtosis Detects 18.16
Mean of Logged Detects	-5.368	SD of Logged Detects 0.56
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.638	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.273	Lilliefors GOF Test
5% Lilliefors Critical Value	0.076	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0049	Standard Error of Mean 2.39E-04
SD	0.00361	95% KM (BCA) UCL 0.00531
95% KM (t) UCL	0.0053	95% KM (Percentile Bootstrap) UCL 0.00532
95% KM (z) UCL	0.0053	95% KM Bootstrap t UCL 0.00538
90% KM Chebyshev UCL	0.00562	95% KM Chebyshev UCL 0.00594
97.5% KM Chebyshev UCL	0.00639	99% KM Chebyshev UCL 0.00728
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	8.617	Anderson-Darling GOF Test
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.212	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0809	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.709	k star (bias corrected MLE) 2.654
Theta hat (MLE)	0.00209	Theta star (bias corrected MLE) 0.00214
nu hat (MLE)	736.8	nu star (bias corrected) 721.9
MLE Mean (bias corrected)	0.00567	MLE Sd (bias corrected) 0.00348
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.843	nu hat (KM) 1032
Approximate Chi Square Value (N/A, α)	958.3	Adjusted Chi Square Value (N/A, β) 958
95% Gamma Approximate KM-UCL (use when n>=50)	0.00528	95% Gamma Adjusted KM-UCL (use when n<50) 0.00528
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00179	Mean 0.0079
Maximum	0.039	Median 0.01
SD	0.00399	CV 0.505
k hat (MLE)	3.875	k star (bias corrected MLE) 3.836
Theta hat (MLE)	0.00204	Theta star (bias corrected MLE) 0.00206
nu hat (MLE)	2170	nu star (bias corrected) 2148
MLE Mean (bias corrected)	0.0079	MLE Sd (bias corrected) 0.00403
		Adjusted Level of Significance (β) 0.0491
Approximate Chi Square Value (N/A, α)	2041	Adjusted Chi Square Value (N/A, β) 2041
95% Gamma Approximate UCL (use when n>=50)	0.00831	95% Gamma Adjusted UCL (use when n<50) 0.00831
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.162	Lilliefors GOF Test
5% Lilliefors Critical Value	0.076	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00502	Mean in Log Scale -5.432
SD in Original Scale	0.0036	SD in Log Scale 0.477
95% t UCL (assumes normality of ROS data)	0.00538	95% Percentile Bootstrap UCL 0.00539

95% BCA Bootstrap UCL	0.00547	95% Bootstrap t UCL	0.00548
95% H-UCL (Log ROS)	0.00516		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00543	Mean in Log Scale	-5.312
SD in Original Scale	0.00336	SD in Log Scale	0.394
95% t UCL (Assumes normality)	0.00576	95% H-Stat UCL	0.00555
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0053	95% KM (% Bootstrap) UCL	0.00532
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***9-methylphenanthrene***883-20-5***ug/l***t)			
General Statistics			
Total Number of Observations	82	Number of Distinct Observations	62
Number of Detects	56	Number of Non-Detects	26
Number of Distinct Detects	54	Number of Distinct Non-Detects	8
Minimum Detect	0.00255	Minimum Non-Detect	0.01
Maximum Detect	0.0326	Maximum Non-Detect	0.0108
Variance Detects	2.05E-05	Percent Non-Detects	31.71%
Mean Detects	0.00584	SD Detects	0.00452
Median Detects	0.00488	CV Detects	7.74E-01
Skewness Detects	4.398	Kurtosis Detects	23.49
Mean of Logged Detects	-5.285	SD of Logged Detects	0.475
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.565	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.266	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0056	Standard Error of Mean	4.54E-04
SD	0.00387	95% KM (BCA) UCL	0.00649
95% KM (t) UCL	0.00636	95% KM (Percentile Bootstrap) UCL	0.00641
95% KM (z) UCL	0.00635	95% KM Bootstrap t UCL	0.00678
90% KM Chebyshev UCL	0.00697	95% KM Chebyshev UCL	0.00758
97.5% KM Chebyshev UCL	0.00844	99% KM Chebyshev UCL	0.0101
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.165	Anderson-Darling GOF Test	
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.161	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.12	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.662	k star (bias corrected MLE)	3.478
Theta hat (MLE)	0.0016	Theta star (bias corrected MLE)	0.00168
nu hat (MLE)	410.2	nu star (bias corrected)	389.5
MLE Mean (bias corrected)	0.00584	MLE Sd (bias corrected)	0.00313
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.101	nu hat (KM)	344.5
Approximate Chi Square Value (344.54, α)	302.5	Adjusted Chi Square Value (344.54, β)	301.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.00638	95% Gamma Adjusted KM-UCL (use when n<50)	0.0064
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00255	Mean	0.00716
Maximum	0.0326	Median	0.00645
SD	0.0042	CV	0.587
k hat (MLE)	3.991	k star (bias corrected MLE)	3.853
Theta hat (MLE)	0.00179	Theta star (bias corrected MLE)	0.00186
nu hat (MLE)	654.5	nu star (bias corrected)	631.9
MLE Mean (bias corrected)	0.00716	MLE Sd (bias corrected)	0.00365

		Adjusted Level of Significance (β)	0.0471
Approximate Chi Square Value (631.87, α)	574.6	Adjusted Chi Square Value (631.87, β)	573.6
95% Gamma Approximate UCL (use when n>=50)	0.00788	95% Gamma Adjusted UCL (use when n<50)	0.00789
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00561	Mean in Log Scale	-5.295
SD in Original Scale	0.00383	SD in Log Scale	0.422
95% t UCL (assumes normality of ROS data)	0.00631	95% Percentile Bootstrap UCL	0.00634
95% BCA Bootstrap UCL	0.00666	95% Bootstrap t UCL	0.00697
95% H-UCL (Log ROS)	0.00596		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.304	95% H-UCL (KM -Log)	0.00598
KM SD (logged)	0.439	95% Critical H Value (KM-Log)	1.808
KM Standard Error of Mean (logged)	0.0561		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00563	Mean in Log Scale	-5.279
SD in Original Scale	0.00374	SD in Log Scale	0.392
95% t UCL (Assumes normality)	0.00632	95% H-Stat UCL	0.00595
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00649		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***acenaphthene***83-32-9***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	280
Number of Detects	308	Number of Non-Detects	54
Number of Distinct Detects	272	Number of Distinct Non-Detects	13
Minimum Detect	0.00138	Minimum Non-Detect	0.01
Maximum Detect	0.211	Maximum Non-Detect	0.0123
Variance Detects	0.00129	Percent Non-Detects	14.92%
Mean Detects	0.031	SD Detects	0.0359
Median Detects	0.0178	CV Detects	1.155
Skewness Detects	2.083	Kurtosis Detects	5.41
Mean of Logged Detects	-4.138	SD of Logged Detects	1.237
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.763	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0505	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0271	Standard Error of Mean	0.00181
SD	0.0343	95% KM (BCA) UCL	0.0299
95% KM (t) UCL	0.0301	95% KM (Percentile Bootstrap) UCL	0.0301
95% KM (z) UCL	0.0301	95% KM Bootstrap t UCL	0.0303
90% KM Chebyshev UCL	0.0326	95% KM Chebyshev UCL	0.035
97.5% KM Chebyshev UCL	0.0384	99% KM Chebyshev UCL	0.0451
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.298	Anderson-Darling GOF Test	
5% A-D Critical Value	0.79	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0901	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0534	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.88	k star (bias corrected MLE)	0.874
Theta hat (MLE)	0.0353	Theta star (bias corrected MLE)	0.0355
nu hat (MLE)	542.3	nu star (bias corrected)	538.3
MLE Mean (bias corrected)	0.031	MLE Sd (bias corrected)	0.0332

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.624	nu hat (KM)	452.1
Approximate Chi Square Value (452.08, α)	403.8	Adjusted Chi Square Value (452.08, β)	403.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.0304	95% Gamma Adjusted KM-UCL (use when n<50)	0.0304

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00138	Mean	0.0279
Maximum	0.211	Median	0.0116
SD	0.0339	CV	1.215
k hat (MLE)	0.927	k star (bias corrected MLE)	0.921
Theta hat (MLE)	0.0301	Theta star (bias corrected MLE)	0.0303
nu hat (MLE)	670.9	nu star (bias corrected)	666.7
MLE Mean (bias corrected)	0.0279	MLE Sd (bias corrected)	0.0291
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (666.71, α)	607.8	Adjusted Chi Square Value (666.71, β)	607.6
95% Gamma Approximate UCL (use when n>=50)	0.0306	95% Gamma Adjusted UCL (use when n<50)	0.0306

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0686	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0505	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0273	Mean in Log Scale	-4.311
SD in Original Scale	0.0343	SD in Log Scale	1.229
95% t UCL (assumes normality of ROS data)	0.0302	95% Percentile Bootstrap UCL	0.0303
95% BCA Bootstrap UCL	0.0306	95% Bootstrap t UCL	0.0305
95% H-UCL (Log ROS)	0.0332		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0272	Mean in Log Scale	-4.305
SD in Original Scale	0.0343	SD in Log Scale	1.209
95% t UCL (Assumes normality)	0.0302	95% H-Stat UCL	0.0325
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.035		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***acenaphthylene***208-96-8***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	176
Number of Detects	209	Number of Non-Detects	153
Number of Distinct Detects	164	Number of Distinct Non-Detects	13
Minimum Detect	0.00216	Minimum Non-Detect	0.01
Maximum Detect	0.0248	Maximum Non-Detect	0.0116
Variance Detects	5.25E-06	Percent Non-Detects	42.27%
Mean Detects	0.00412	SD Detects	0.00229
Median Detects	0.00354	CV Detects	5.56E-01
Skewness Detects	4.462	Kurtosis Detects	32.69
Mean of Logged Detects	-5.583	SD of Logged Detects	0.39

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.676	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0613	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00404	Standard Error of Mean	1.28E-04
SD	0.00202	95% KM (BCA) UCL	0.00427
95% KM (t) UCL	0.00425	95% KM (Percentile Bootstrap) UCL	0.00424
95% KM (z) UCL	0.00425	95% KM Bootstrap t UCL	0.00428
90% KM Chebyshev UCL	4.42E-03	95% KM Chebyshev UCL	4.59E-03
97.5% KM Chebyshev UCL	0.00483	99% KM Chebyshev UCL	0.00531

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	6.175	Anderson-Darling GOF Test
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.135	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0627	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	5.699	k star (bias corrected MLE) 5.62
Theta hat (MLE)	7.23E-04	Theta star (bias corrected MLE) 7.33E-04
nu hat (MLE)	2382	nu star (bias corrected) 2349
MLE Mean (bias corrected)	0.00412	MLE Sd (bias corrected) 0.00174
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	4.01	nu hat (KM) 2903
Approximate Chi Square Value (N/A, α)	2779	Adjusted Chi Square Value (N/A, β) 2778
95% Gamma Approximate KM-UCL (use when n>=50)	0.00422	95% Gamma Adjusted KM-UCL (use when n<50) 0.00422
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00216	Mean 0.0066
Maximum	0.0248	Median 0.00569
SD	0.00339	CV 0.513
k hat (MLE)	3.504	k star (bias corrected MLE) 3.477
Theta hat (MLE)	0.00188	Theta star (bias corrected MLE) 0.0019
nu hat (MLE)	2537	nu star (bias corrected) 2517
MLE Mean (bias corrected)	0.0066	MLE Sd (bias corrected) 0.00354
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2401	Adjusted Chi Square Value (N/A, β) 2401
95% Gamma Approximate UCL (use when n>=50)	0.00692	95% Gamma Adjusted UCL (use when n<50) 0.00692
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0994	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0613	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00402	Mean in Log Scale -5.589
SD in Original Scale	0.00191	SD in Log Scale 0.357
95% t UCL (assumes normality of ROS data)	0.00419	95% Percentile Bootstrap UCL 0.00419
95% BCA Bootstrap UCL	0.00421	95% Bootstrap t UCL 0.00421
95% H-UCL (Log ROS)	0.00412	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00458	Mean in Log Scale -5.446
SD in Original Scale	0.00182	SD in Log Scale 0.337
95% t UCL (Assumes normality)	0.00474	95% H-Stat UCL 0.00471
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.00425	95% KM (% Bootstrap) UCL 0.00424
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***anthracene***120-12-7***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 253
Number of Detects	326	Number of Non-Detects 36
Number of Distinct Detects	247	Number of Distinct Non-Detects 10
Minimum Detect	0.0019	Minimum Non-Detect 0.01
Maximum Detect	0.0279	Maximum Non-Detect 0.0111
Variance Detects	1.15E-05	Percent Non-Detects 9.95%
Mean Detects	0.00515	SD Detects 0.00338
Median Detects	0.00415	CV Detects 6.57E-01
Skewness Detects	2.679	Kurtosis Detects 10.78
Mean of Logged Detects	-5.417	SD of Logged Detects 0.515
Normal GOF Test on Detects Only		

Shapiro Wilk Test Statistic	0.758	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.168	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0491	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00509	Standard Error of Mean	1.76E-04
SD	0.00327	95% KM (BCA) UCL	0.00537
95% KM (t) UCL	0.00538	95% KM (Percentile Bootstrap) UCL	0.00538
95% KM (z) UCL	0.00537	95% KM Bootstrap t UCL	0.00542
90% KM Chebyshev UCL	0.00561	95% KM Chebyshev UCL	0.00585
97.5% KM Chebyshev UCL	0.00618	99% KM Chebyshev UCL	0.00683
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.191	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.123	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0506	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.518	k star (bias corrected MLE)	3.488
Theta hat (MLE)	0.00146	Theta star (bias corrected MLE)	0.00148
nu hat (MLE)	2294	nu star (bias corrected)	2274
MLE Mean (bias corrected)	0.00515	MLE Sd (bias corrected)	0.00276
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.411	nu hat (KM)	1746
Approximate Chi Square Value (N/A, α)	1650	Adjusted Chi Square Value (N/A, β)	1649
95% Gamma Approximate KM-UCL (use when n>=50)	0.00538	95% Gamma Adjusted KM-UCL (use when n<50)	0.00538
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0019	Mean	0.00564
Maximum	0.0279	Median	0.00434
SD	0.00352	CV	0.625
k hat (MLE)	3.332	k star (bias corrected MLE)	3.307
Theta hat (MLE)	0.00169	Theta star (bias corrected MLE)	0.0017
nu hat (MLE)	2413	nu star (bias corrected)	2394
MLE Mean (bias corrected)	0.00564	MLE Sd (bias corrected)	0.0031
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2281	Adjusted Chi Square Value (N/A, β)	2281
95% Gamma Approximate UCL (use when n>=50)	0.00591	95% Gamma Adjusted UCL (use when n<50)	0.00592
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0874	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0491	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00508	Mean in Log Scale	-5.422
SD in Original Scale	0.00325	SD in Log Scale	0.498
95% t UCL (assumes normality of ROS data)	0.00536	95% Percentile Bootstrap UCL	0.00536
95% BCA Bootstrap UCL	0.00537	95% Bootstrap t UCL	0.00537
95% H-UCL (Log ROS)	0.00524		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00516	Mean in Log Scale	-5.401
SD in Original Scale	0.00321	SD in Log Scale	0.491
95% t UCL (Assumes normality)	0.00544	95% H-Stat UCL	0.00533
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00537		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***benzo(a)anthracene***56-55-3***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations 215
Number of Detects	248	Number of Non-Detects 114
Number of Distinct Detects	206	Number of Distinct Non-Detects 14
Minimum Detect	0.00161	Minimum Non-Detect 0.01
Maximum Detect	0.0555	Maximum Non-Detect 0.0116
Variance Detects	3.69E-05	Percent Non-Detects 31.49%
Mean Detects	0.00655	SD Detects 0.00607
Median Detects	0.00491	CV Detects 9.27E-01
Skewness Detects	4.82	Kurtosis Detects 29.29
Mean of Logged Detects	-5.217	SD of Logged Detects 0.537
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.543	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.249	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0563	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00608	Standard Error of Mean 2.80E-04
SD	0.00517	95% KM (BCA) UCL 0.00652
95% KM (t) UCL	0.00654	95% KM (Percentile Bootstrap) UCL 0.00655
95% KM (z) UCL	0.00654	95% KM Bootstrap t UCL 0.00665
90% KM Chebyshev UCL	0.00692	95% KM Chebyshev UCL 0.0073
97.5% KM Chebyshev UCL	0.00782	99% KM Chebyshev UCL 0.00886
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	11.45	Anderson-Darling GOF Test
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.139	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0586	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.802	k star (bias corrected MLE) 2.771
Theta hat (MLE)	0.00234	Theta star (bias corrected MLE) 0.00236
nu hat (MLE)	1390	nu star (bias corrected) 1374
MLE Mean (bias corrected)	0.00655	MLE Sd (bias corrected) 0.00394
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.384	nu hat (KM) 1002
Approximate Chi Square Value (N/A, α)	929.3	Adjusted Chi Square Value (N/A, β) 929.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.00655	95% Gamma Adjusted KM-UCL (use when n<50) 0.00655
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00161	Mean 0.00766
Maximum	0.0555	Median 0.00695
SD	0.00529	CV 0.69
k hat (MLE)	3.48	k star (bias corrected MLE) 3.453
Theta hat (MLE)	0.0022	Theta star (bias corrected MLE) 0.00222
nu hat (MLE)	2519	nu star (bias corrected) 2500
MLE Mean (bias corrected)	0.00766	MLE Sd (bias corrected) 0.00412
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2385	Adjusted Chi Square Value (N/A, β) 2384
95% Gamma Approximate UCL (use when n>=50)	0.00803	95% Gamma Adjusted UCL (use when n<50) 0.00803
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0957	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0563	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00614	Mean in Log Scale -5.247
SD in Original Scale	0.00516	SD in Log Scale 0.488
95% t UCL (assumes normality of ROS data)	0.00659	95% Percentile Bootstrap UCL 0.00662
95% BCA Bootstrap UCL	0.00669	95% Bootstrap t UCL 0.00668
95% H-UCL (Log ROS)	0.00621	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00613	Mean in Log Scale -5.23
SD in Original Scale	0.00506	SD in Log Scale 0.445
95% t UCL (Assumes normality)	0.00657	95% H-Stat UCL 0.00616
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL0.00652

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***benzo(a)pyrene***50-32-8***ug/l***t)

General Statistics		
Total Number of Observations	362	Number of Distinct Observations129
Number of Detects	135	Number of Non-Detects227
Number of Distinct Detects	120	Number of Distinct Non-Detects17
Minimum Detect	0.00247	Minimum Non-Detect0.01
Maximum Detect	0.0463	Maximum Non-Detect0.0125
Variance Detects	4.79E-05	Percent Non-Detects62.71%
Mean Detects	0.0085	SD Detects0.00692
Median Detects	0.00634	CV Detects8.14E-01
Skewness Detects	3.481	Kurtosis Detects13.65
Mean of Logged Detects	-4.939	SD of Logged Detects0.521

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.597	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.255	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0763	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00695	Standard Error of Mean2.65E-04
SD	0.00455	95% KM (BCA) UCL0.00737
95% KM (t) UCL	0.00738	95% KM (Percentile Bootstrap) UCL0.00739
95% KM (z) UCL	0.00738	95% KM Bootstrap t UCL0.00747
90% KM Chebyshev UCL	0.00774	95% KM Chebyshev UCL0.0081
97.5% KM Chebyshev UCL	0.0086	99% KM Chebyshev UCL0.00958

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	7.713	Anderson-Darling GOF Test
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.176	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.081	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	3.064	k star (bias corrected MLE)3.001
Theta hat (MLE)	0.00277	Theta star (bias corrected MLE)0.00283
nu hat (MLE)	827.2	nu star (bias corrected)810.2
MLE Mean (bias corrected)	0.0085	MLE Sd (bias corrected)0.00491

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.33	nu hat (KM)1687
Approximate Chi Square Value (N/A, α)	1593	Adjusted Chi Square Value (N/A, β)1592
95% Gamma Approximate KM-UCL (use when n>=50)	0.00736	95% Gamma Adjusted KM-UCL (use when n<50)0.00736

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00247	Mean0.00957
Maximum	0.0463	Median0.01
SD	0.00433	CV0.452
k hat (MLE)	7.401	k star (bias corrected MLE)7.342
Theta hat (MLE)	0.00129	Theta star (bias corrected MLE)0.0013
nu hat (MLE)	5358	nu star (bias corrected)5315
MLE Mean (bias corrected)	0.00957	MLE Sd (bias corrected)0.00353
		Adjusted Level of Significance (β)0.0493
Approximate Chi Square Value (N/A, α)	5147	Adjusted Chi Square Value (N/A, β)5146
95% Gamma Approximate UCL (use when n>=50)	0.00989	95% Gamma Adjusted UCL (use when n<50)0.00989

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.137	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0763	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00716	Mean in Log Scale	-5.048
SD in Original Scale	0.00464	SD in Log Scale	0.422
95% t UCL (assumes normality of ROS data)	0.00756	95% Percentile Bootstrap UCL	0.00758
95% BCA Bootstrap UCL	0.00763	95% Bootstrap t UCL	0.00765
95% H-UCL (Log ROS)	0.0073		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00645	Mean in Log Scale	-5.137
SD in Original Scale	0.00451	SD in Log Scale	0.353
95% t UCL (Assumes normality)	0.00684	95% H-Stat UCL	0.00646
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.00738	95% KM (% Bootstrap) UCL	0.00739

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***benzo(b)fluoranthene***205-99-2***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	268
Number of Detects	338	Number of Non-Detects	24
Number of Distinct Detects	260	Number of Distinct Non-Detects	12
Minimum Detect	0.00113	Minimum Non-Detect	0.01
Maximum Detect	0.0399	Maximum Non-Detect	0.0151
Variance Detects	1.96E-05	Percent Non-Detects	6.63%
Mean Detects	0.00514	SD Detects	0.00443
Median Detects	0.00407	CV Detects	8.61E-01
Skewness Detects	4.049	Kurtosis Detects	22.94
Mean of Logged Detects	-5.477	SD of Logged Detects	0.598

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.643	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.205	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0482	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00508	Standard Error of Mean	2.28E-04
SD	0.00431	95% KM (BCA) UCL	0.0055
95% KM (t) UCL	0.00546	95% KM (Percentile Bootstrap) UCL	0.00547
95% KM (z) UCL	0.00545	95% KM Bootstrap t UCL	0.00552
90% KM Chebyshev UCL	0.00576	95% KM Chebyshev UCL	0.00607
97.5% KM Chebyshev UCL	0.00651	99% KM Chebyshev UCL	0.00735

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.807	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.101	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0499	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.574	k star (bias corrected MLE)	2.553
Theta hat (MLE)	0.002	Theta star (bias corrected MLE)	0.00201
nu hat (MLE)	1740	nu star (bias corrected)	1726
MLE Mean (bias corrected)	0.00514	MLE Sd (bias corrected)	0.00322

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.39	nu hat (KM)	1007
Approximate Chi Square Value (N/A, α)	934	Adjusted Chi Square Value (N/A, β)	933.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.00547	95% Gamma Adjusted KM-UCL (use when n<50)	0.00548

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00113	Mean	0.00546
Maximum	0.0399	Median	0.00426
SD	0.00445	CV	0.814
k hat (MLE)	2.54	k star (bias corrected MLE)	2.52

Theta hat (MLE)	0.00215	Theta star (bias corrected MLE)	0.00217
nu hat (MLE)	1839	nu star (bias corrected)	1825
MLE Mean (bias corrected)	0.00546	MLE Sd (bias corrected)	0.00344
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1727	Adjusted Chi Square Value (N/A, β)	1726
95% Gamma Approximate UCL (use when n>=50)	0.00577	95% Gamma Adjusted UCL (use when n<50)	0.00578
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0562	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0482	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00507	Mean in Log Scale	-5.481
SD in Original Scale	0.0043	SD in Log Scale	0.582
95% t UCL (assumes normality of ROS data)	0.00544	95% Percentile Bootstrap UCL	0.00546
95% BCA Bootstrap UCL	0.00547	95% Bootstrap t UCL	0.00552
95% H-UCL (Log ROS)	0.00522		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00516	Mean in Log Scale	-5.46
SD in Original Scale	0.00428	SD in Log Scale	0.582
95% t UCL (Assumes normality)	0.00553	95% H-Stat UCL	0.00533
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0055		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***benzo(e)pyrene***192-97-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	258
Number of Detects	335	Number of Non-Detects	27
Number of Distinct Detects	252	Number of Distinct Non-Detects	9
Minimum Detect	0.00168	Minimum Non-Detect	0.01
Maximum Detect	0.0395	Maximum Non-Detect	0.011
Variance Detects	1.88E-05	Percent Non-Detects	7.46%
Mean Detects	0.00503	SD Detects	0.00434
Median Detects	0.00399	CV Detects	8.63E-01
Skewness Detects	4.261	Kurtosis Detects	24.16
Mean of Logged Detects	-5.481	SD of Logged Detects	0.551
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.601	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.226	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0484	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00496	Standard Error of Mean	2.23E-04
SD	0.00421	95% KM (BCA) UCL	0.00532
95% KM (t) UCL	0.00533	95% KM (Percentile Bootstrap) UCL	0.00534
95% KM (z) UCL	0.00533	95% KM Bootstrap t UCL	0.00539
90% KM Chebyshev UCL	0.00563	95% KM Chebyshev UCL	0.00593
97.5% KM Chebyshev UCL	0.00635	99% KM Chebyshev UCL	0.00718
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.17	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.138	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0501	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.813	k star (bias corrected MLE)	2.789
Theta hat (MLE)	0.00179	Theta star (bias corrected MLE)	0.0018
nu hat (MLE)	1884	nu star (bias corrected)	1869
MLE Mean (bias corrected)	0.00503	MLE Sd (bias corrected)	0.00301
Gamma Kaplan-Meier (KM) Statistics			

k hat (KM)	1.392	nu hat (KM)	1008
Approximate Chi Square Value (N/A, α)	934.8	Adjusted Chi Square Value (N/A, β)	934.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.00535	95% Gamma Adjusted KM-UCL (use when n<50)	0.00535
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00168	Mean	0.0054
Maximum	0.0395	Median	0.00415
SD	0.00438	CV	0.81
k hat (MLE)	2.732	k star (bias corrected MLE)	2.712
Theta hat (MLE)	0.00198	Theta star (bias corrected MLE)	0.00199
nu hat (MLE)	1978	nu star (bias corrected)	1963
MLE Mean (bias corrected)	0.0054	MLE Sd (bias corrected)	0.00328
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1861	Adjusted Chi Square Value (N/A, β)	1861
95% Gamma Approximate UCL (use when n>=50)	0.0057	95% Gamma Adjusted UCL (use when n<50)	0.0057
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0848	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0484	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00496	Mean in Log Scale	-5.485
SD in Original Scale	0.0042	SD in Log Scale	0.537
95% t UCL (assumes normality of ROS data)	0.00532	95% Percentile Bootstrap UCL	0.00532
95% BCA Bootstrap UCL	0.00541	95% Bootstrap t UCL	0.00538
95% H-UCL (Log ROS)	0.00504		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00504	Mean in Log Scale	-5.464
SD in Original Scale	0.00418	SD in Log Scale	0.534
95% t UCL (Assumes normality)	0.00541	95% H-Stat UCL	0.00514
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00532		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***benzo(g,h,i)perylene***191-24-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	224
Number of Detects	280	Number of Non-Detects	82
Number of Distinct Detects	215	Number of Distinct Non-Detects	13
Minimum Detect	0.00169	Minimum Non-Detect	0.01
Maximum Detect	0.0358	Maximum Non-Detect	0.0116
Variance Detects	1.43E-05	Percent Non-Detects	22.65%
Mean Detects	0.00445	SD Detects	0.00378
Median Detects	0.00341	CV Detects	8.48E-01
Skewness Detects	4.289	Kurtosis Detects	24.92
Mean of Logged Detects	-5.593	SD of Logged Detects	0.533
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.601	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.232	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0529	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00429	Standard Error of Mean	1.87E-04
SD	0.00342	95% KM (BCA) UCL	0.00464
95% KM (t) UCL	0.0046	95% KM (Percentile Bootstrap) UCL	0.0046
95% KM (z) UCL	0.0046	95% KM Bootstrap t UCL	0.00466
90% KM Chebyshev UCL	0.00485	95% KM Chebyshev UCL	0.00511
97.5% KM Chebyshev UCL	0.00546	99% KM Chebyshev UCL	0.00615
Gamma GOF Tests on Detected Observations Only			

A-D Test Statistic	11.12	Anderson-Darling GOF Test	
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.147	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0548	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.951	k star (bias corrected MLE)	2.922
Theta hat (MLE)	0.00151	Theta star (bias corrected MLE)	0.00152
nu hat (MLE)	1653	nu star (bias corrected)	1636
MLE Mean (bias corrected)	0.00445	MLE Sd (bias corrected)	0.00261
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.573	nu hat (KM)	1139
Approximate Chi Square Value (N/A, α)	1061	Adjusted Chi Square Value (N/A, β)	1061
95% Gamma Approximate KM-UCL (use when n>=50)	0.00461	95% Gamma Adjusted KM-UCL (use when n<50)	0.00461
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00169	Mean	0.00571
Maximum	0.0358	Median	0.00401
SD	0.00405	CV	0.71
k hat (MLE)	2.61	k star (bias corrected MLE)	2.591
Theta hat (MLE)	0.00219	Theta star (bias corrected MLE)	0.0022
nu hat (MLE)	1890	nu star (bias corrected)	1876
MLE Mean (bias corrected)	0.00571	MLE Sd (bias corrected)	0.00355
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1776	Adjusted Chi Square Value (N/A, β)	1776
95% Gamma Approximate UCL (use when n>=50)	0.00603	95% Gamma Adjusted UCL (use when n<50)	0.00603
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0966	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0529	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0043	Mean in Log Scale	-5.604
SD in Original Scale	0.00339	SD in Log Scale	0.499
95% t UCL (assumes normality of ROS data)	0.00459	95% Percentile Bootstrap UCL	0.0046
95% BCA Bootstrap UCL	0.00464	95% Bootstrap t UCL	0.00464
95% H-UCL (Log ROS)	0.00437		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00463	Mean in Log Scale	-5.517
SD in Original Scale	0.00334	SD in Log Scale	0.489
95% t UCL (Assumes normality)	0.00491	95% H-Stat UCL	0.00474
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00464		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***benzo(j,k)fluoranthene***bkjflanth***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	210
Number of Detects	238	Number of Non-Detects	124
Number of Distinct Detects	201	Number of Distinct Non-Detects	13
Minimum Detect	0.00199	Minimum Non-Detect	0.01
Maximum Detect	0.0365	Maximum Non-Detect	0.0116
Variance Detects	2.41E-05	Percent Non-Detects	34.25%
Mean Detects	0.00603	SD Detects	0.00491
Median Detects	0.00445	CV Detects	8.15E-01
Skewness Detects	3.712	Kurtosis Detects	17.18
Mean of Logged Detects	-5.284	SD of Logged Detects	0.52
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.603	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	

Lilliefors Test Statistic	0.233	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0574	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00557	Standard Error of Mean	2.28E-04
SD	0.00414	95% KM (BCA) UCL	0.00595
95% KM (t) UCL	0.00595	95% KM (Percentile Bootstrap) UCL	0.00595
95% KM (z) UCL	0.00595	95% KM Bootstrap t UCL	0.00602
90% KM Chebyshev UCL	0.00626	95% KM Chebyshev UCL	0.00657
97.5% KM Chebyshev UCL	0.007	99% KM Chebyshev UCL	0.00784
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	12.73	Anderson-Darling GOF Test	
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.153	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0596	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.063	k star (bias corrected MLE)	3.027
Theta hat (MLE)	0.00197	Theta star (bias corrected MLE)	0.00199
nu hat (MLE)	1458	nu star (bias corrected)	1441
MLE Mean (bias corrected)	0.00603	MLE Sd (bias corrected)	0.00346
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.811	nu hat (KM)	1311
Approximate Chi Square Value (N/A, α)	1228	Adjusted Chi Square Value (N/A, β)	1228
95% Gamma Approximate KM-UCL (use when n>=50)	0.00595	95% Gamma Adjusted KM-UCL (use when n<50)	0.00595
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00199	Mean	0.00739
Maximum	0.0365	Median	0.00648
SD	0.00441	CV	0.596
k hat (MLE)	3.644	k star (bias corrected MLE)	3.615
Theta hat (MLE)	0.00203	Theta star (bias corrected MLE)	0.00204
nu hat (MLE)	2638	nu star (bias corrected)	2617
MLE Mean (bias corrected)	0.00739	MLE Sd (bias corrected)	0.00389
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2500	Adjusted Chi Square Value (N/A, β)	2499
95% Gamma Approximate UCL (use when n>=50)	0.00774	95% Gamma Adjusted UCL (use when n<50)	0.00774
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0574	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00565	Mean in Log Scale	-5.314
SD in Original Scale	0.00413	SD in Log Scale	0.47
95% t UCL (assumes normality of ROS data)	0.006	95% Percentile Bootstrap UCL	0.00602
95% BCA Bootstrap UCL	0.00608	95% Bootstrap t UCL	0.00606
95% H-UCL (Log ROS)	0.00574		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00575	Mean in Log Scale	-5.274
SD in Original Scale	0.004	SD in Log Scale	0.422
95% t UCL (Assumes normality)	0.0061	95% H-Stat UCL	0.00582
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00595		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***benzonaphthothiophene***61523-34-0***ug/l****)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	253

Number of Detects	311	Number of Non-Detects	24
Number of Distinct Detects	246	Number of Distinct Non-Detects	8
Minimum Detect	0.00122	Minimum Non-Detect	0.01
Maximum Detect	0.0245	Maximum Non-Detect	0.0109
Variance Detects	7.13E-06	Percent Non-Detects	7.16%
Mean Detects	0.00385	SD Detects	0.00267
Median Detects	0.0034	CV Detects	6.94E-01
Skewness Detects	4.325	Kurtosis Detects	27.29
Mean of Logged Detects	-5.701	SD of Logged Detects	0.5
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.659	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.179	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00383	Standard Error of Mean	1.44E-04
SD	0.0026	95% KM (BCA) UCL	0.00407
95% KM (t) UCL	0.00407	95% KM (Percentile Bootstrap) UCL	0.00407
95% KM (z) UCL	0.00407	95% KM Bootstrap t UCL	0.00411
90% KM Chebyshev UCL	0.00426	95% KM Chebyshev UCL	0.00446
97.5% KM Chebyshev UCL	0.00473	99% KM Chebyshev UCL	0.00526
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.815	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0885	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0516	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.705	k star (bias corrected MLE)	3.671
Theta hat (MLE)	0.00104	Theta star (bias corrected MLE)	0.00105
nu hat (MLE)	2304	nu star (bias corrected)	2283
MLE Mean (bias corrected)	0.00385	MLE Sd (bias corrected)	0.00201
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.162	nu hat (KM)	1448
Approximate Chi Square Value (N/A, α)	1361	Adjusted Chi Square Value (N/A, β)	1361
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00407	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00407
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00122	Mean	0.00429
Maximum	0.0245	Median	0.00357
SD	0.00302	CV	0.705
k hat (MLE)	3.083	k star (bias corrected MLE)	3.057
Theta hat (MLE)	0.00139	Theta star (bias corrected MLE)	0.0014
nu hat (MLE)	2066	nu star (bias corrected)	2048
MLE Mean (bias corrected)	0.00429	MLE Sd (bias corrected)	0.00245
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1944	Adjusted Chi Square Value (N/A, β)	1944
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00452	95% Gamma Adjusted UCL (use when $n < 50$)	0.00452
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0549	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00382	Mean in Log Scale	-5.702
SD in Original Scale	0.00259	SD in Log Scale	0.488
95% t UCL (assumes normality of ROS data)	0.00405	95% Percentile Bootstrap UCL	0.00405
95% BCA Bootstrap UCL	0.00409	95% Bootstrap t UCL	0.00409
95% H-UCL (Log ROS)	0.00394		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00394	Mean in Log Scale	-5.67
SD in Original Scale	0.00259	SD in Log Scale	0.494
95% t UCL (Assumes normality)	0.00418	95% H-Stat UCL	0.00409
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (BCA) UCL	0.00407	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***benzothiophene***95-15-8***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 158
Number of Detects	169	Number of Non-Detects 193
Number of Distinct Detects	149	Number of Distinct Non-Detects 12
Minimum Detect	0.0016	Minimum Non-Detect 0.01
Maximum Detect	0.0305	Maximum Non-Detect 0.0112
Variance Detects	1.84E-05	Percent Non-Detects 53.31%
Mean Detects	0.00559	SD Detects 0.00429
Median Detects	0.00422	CV Detects 7.68E-01
Skewness Detects	2.964	Kurtosis Detects 11.31
Mean of Logged Detects	-5.366	SD of Logged Detects 0.548
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.687	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.208	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0682	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00494	Standard Error of Mean 2.01E-04
SD	0.00326	95% KM (BCA) UCL 0.00524
95% KM (t) UCL	0.00527	95% KM (Percentile Bootstrap) UCL 0.00528
95% KM (z) UCL	0.00527	95% KM Bootstrap t UCL 0.00531
90% KM Chebyshev UCL	0.00554	95% KM Chebyshev UCL 0.00582
97.5% KM Chebyshev UCL	0.0062	99% KM Chebyshev UCL 0.00694
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	7.208	Anderson-Darling GOF Test
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.156	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0721	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.952	k star (bias corrected MLE) 2.903
Theta hat (MLE)	0.00189	Theta star (bias corrected MLE) 0.00192
nu hat (MLE)	997.6	nu star (bias corrected) 981.2
MLE Mean (bias corrected)	0.00559	MLE Sd (bias corrected) 0.00328
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.293	nu hat (KM) 1660
Approximate Chi Square Value (N/A, α)	1567	Adjusted Chi Square Value (N/A, β) 1566
95% Gamma Approximate KM-UCL (use when n>=50)	0.00524	95% Gamma Adjusted KM-UCL (use when n<50) 0.00524
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0016	Mean 0.00794
Maximum	0.0305	Median 0.01
SD	0.00366	CV 0.461
k hat (MLE)	4.17	k star (bias corrected MLE) 4.137
Theta hat (MLE)	0.0019	Theta star (bias corrected MLE) 0.00192
nu hat (MLE)	3019	nu star (bias corrected) 2995
MLE Mean (bias corrected)	0.00794	MLE Sd (bias corrected) 0.0039
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2869	Adjusted Chi Square Value (N/A, β) 2869
95% Gamma Approximate UCL (use when n>=50)	0.00829	95% Gamma Adjusted UCL (use when n<50) 0.00829
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.113	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0682	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00501	Mean in Log Scale -5.425
SD in Original Scale	0.00323	SD in Log Scale 0.474

95% t UCL (assumes normality of ROS data)	0.00529	95% Percentile Bootstrap UCL	0.00531
95% BCA Bootstrap UCL	0.00532	95% Bootstrap t UCL	0.00533
95% H-UCL (Log ROS)	0.00515		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00538	Mean in Log Scale	-5.309
SD in Original Scale	0.00293	SD in Log Scale	0.378
95% t UCL (Assumes normality)	0.00563	95% H-Stat UCL	0.0055
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00527	95% KM (% Bootstrap) UCL	0.00528
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***carbazole***86-74-8***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	125
Number of Detects	128	Number of Non-Detects	234
Number of Distinct Detects	116	Number of Distinct Non-Detects	16
Minimum Detect	0.00198	Minimum Non-Detect	0.01
Maximum Detect	0.0379	Maximum Non-Detect	0.0116
Variance Detects	4.00E-05	Percent Non-Detects	64.64%
Mean Detects	0.00907	SD Detects	0.00632
Median Detects	0.00669	CV Detects	6.97E-01
Skewness Detects	2.096	Kurtosis Detects	4.657
Mean of Logged Detects	-4.876	SD of Logged Detects	0.561
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.754	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.228	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0783	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00722	Standard Error of Mean	2.61E-04
SD	0.00423	95% KM (BCA) UCL	0.00763
95% KM (t) UCL	0.00765	95% KM (Percentile Bootstrap) UCL	0.00763
95% KM (z) UCL	0.00765	95% KM Bootstrap t UCL	0.00767
90% KM Chebyshev UCL	0.008	95% KM Chebyshev UCL	0.00835
97.5% KM Chebyshev UCL	0.00885	99% KM Chebyshev UCL	0.00981
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.27	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.158	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0828	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.037	k star (bias corrected MLE)	2.971
Theta hat (MLE)	0.00299	Theta star (bias corrected MLE)	0.00305
nu hat (MLE)	777.4	nu star (bias corrected)	760.5
MLE Mean (bias corrected)	0.00907	MLE Sd (bias corrected)	0.00526
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.908	nu hat (KM)	2105
Approximate Chi Square Value (N/A, α)	2000	Adjusted Chi Square Value (N/A, β)	1999
95% Gamma Approximate KM-UCL (use when n>=50)	0.0076	95% Gamma Adjusted KM-UCL (use when n<50)	0.0076
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00198	Mean	0.00981
Maximum	0.0379	Median	0.01
SD	0.00383	CV	0.39
k hat (MLE)	7.962	k star (bias corrected MLE)	7.898
Theta hat (MLE)	0.00123	Theta star (bias corrected MLE)	0.00124
nu hat (MLE)	5764	nu star (bias corrected)	5718

MLE Mean (bias corrected)	0.00981	MLE Sd (bias corrected)	0.00349
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	5543	Adjusted Chi Square Value (N/A, β)	5542
95% Gamma Approximate UCL (use when n>=50)	0.0101	95% Gamma Adjusted UCL (use when n<50)	0.0101
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.124	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0783	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00742	Mean in Log Scale	-5.018
SD in Original Scale	0.00435	SD in Log Scale	0.455
95% t UCL (assumes normality of ROS data)	0.0078	95% Percentile Bootstrap UCL	0.0078
95% BCA Bootstrap UCL	0.00783	95% Bootstrap t UCL	0.00785
95% H-UCL (Log ROS)	0.00766		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00659	Mean in Log Scale	-5.12
SD in Original Scale	0.00418	SD in Log Scale	0.379
95% t UCL (Assumes normality)	0.00695	95% H-Stat UCL	0.00665
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00765	95% KM (% Bootstrap) UCL	0.00763
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***chrysene***218-01-9***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	279
Number of Detects	345	Number of Non-Detects	17
Number of Distinct Detects	274	Number of Distinct Non-Detects	13
Minimum Detect	0.00181	Minimum Non-Detect	0.01
Maximum Detect	0.0652	Maximum Non-Detect	0.0161
Variance Detects	4.29E-05	Percent Non-Detects	4.70%
Mean Detects	0.00852	SD Detects	0.00655
Median Detects	0.00702	CV Detects	7.69E-01
Skewness Detects	4.514	Kurtosis Detects	28.98
Mean of Logged Detects	-4.928	SD of Logged Detects	0.53
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.634	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0477	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00843	Standard Error of Mean	3.39E-04
SD	0.00642	95% KM (BCA) UCL	0.00897
95% KM (t) UCL	0.00899	95% KM (Percentile Bootstrap) UCL	0.00905
95% KM (z) UCL	0.00899	95% KM Bootstrap t UCL	0.00909
90% KM Chebyshev UCL	0.00945	95% KM Chebyshev UCL	0.00991
97.5% KM Chebyshev UCL	0.0105	99% KM Chebyshev UCL	0.0118
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.349	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.101	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0493	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.245	k star (bias corrected MLE)	3.219
Theta hat (MLE)	0.00262	Theta star (bias corrected MLE)	0.00265
nu hat (MLE)	2239	nu star (bias corrected)	2221
MLE Mean (bias corrected)	0.00852	MLE Sd (bias corrected)	0.00475
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.726	nu hat (KM)	1249
Approximate Chi Square Value (N/A, α)	1168	Adjusted Chi Square Value (N/A, β)	1168

95% Gamma Approximate KM-UCL (use when n>=50)	0.00901	95% Gamma Adjusted KM-UCL (use when n<50)	0.00902
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00181	Mean	0.00859
Maximum	0.0652	Median	0.00732
SD	0.0064	CV	0.745
k hat (MLE)	3.385	k star (bias corrected MLE)	3.359
Theta hat (MLE)	0.00254	Theta star (bias corrected MLE)	0.00256
nu hat (MLE)	2451	nu star (bias corrected)	2432
MLE Mean (bias corrected)	0.00859	MLE Sd (bias corrected)	0.00468
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2318	Adjusted Chi Square Value (N/A, β)	2318
95% Gamma Approximate UCL (use when n>=50)	0.00901	95% Gamma Adjusted UCL (use when n<50)	0.00901
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0569	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0477	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00842	Mean in Log Scale	-4.933
SD in Original Scale	0.00641	SD in Log Scale	0.519
95% t UCL (assumes normality of ROS data)	0.00898	95% Percentile Bootstrap UCL	0.009
95% BCA Bootstrap UCL	0.00909	95% Bootstrap t UCL	0.00909
95% H-UCL (Log ROS)	0.00866		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0084	Mean in Log Scale	-4.937
SD in Original Scale	0.00642	SD in Log Scale	0.52
95% t UCL (Assumes normality)	0.00895	95% H-Stat UCL	0.00863
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00897		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***decalin, cis- & trans-***decalinc_t***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	195
Number of Detects	210	Number of Non-Detects	152
Number of Distinct Detects	172	Number of Distinct Non-Detects	28
Minimum Detect	0.00226	Minimum Non-Detect	0.005
Maximum Detect	0.0196	Maximum Non-Detect	0.0116
Variance Detects	6.11E-06	Percent Non-Detects	41.99%
Mean Detects	0.00473	SD Detects	0.00247
Median Detects	0.004	CV Detects	5.22E-01
Skewness Detects	2.394	Kurtosis Detects	8.639
Mean of Logged Detects	-5.454	SD of Logged Detects	0.426
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.793	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.159	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0611	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00421	Standard Error of Mean	1.14E-04
SD	0.00205	95% KM (BCA) UCL	0.0044
95% KM (t) UCL	0.0044	95% KM (Percentile Bootstrap) UCL	0.0044
95% KM (z) UCL	0.0044	95% KM Bootstrap t UCL	0.00441
90% KM Chebyshev UCL	4.55E-03	95% KM Chebyshev UCL	4.71E-03
97.5% KM Chebyshev UCL	0.00492	99% KM Chebyshev UCL	0.00535
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.983	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.118	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0626	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.152	k star (bias corrected MLE)	5.082
Theta hat (MLE)	9.18E-04	Theta star (bias corrected MLE)	9.31E-04
nu hat (MLE)	2164	nu star (bias corrected)	2134
MLE Mean (bias corrected)	0.00473	MLE Sd (bias corrected)	0.0021
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	4.238	nu hat (KM)	3068
Approximate Chi Square Value (N/A, α)	2941	Adjusted Chi Square Value (N/A, β)	2940
95% Gamma Approximate KM-UCL (use when n>=50)	0.00439	95% Gamma Adjusted KM-UCL (use when n<50)	0.00439
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00226	Mean	0.00694
Maximum	0.0196	Median	0.00698
SD	0.00321	CV	0.462
k hat (MLE)	4.082	k star (bias corrected MLE)	4.05
Theta hat (MLE)	0.0017	Theta star (bias corrected MLE)	0.00171
nu hat (MLE)	2955	nu star (bias corrected)	2932
MLE Mean (bias corrected)	0.00694	MLE Sd (bias corrected)	0.00345
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2807	Adjusted Chi Square Value (N/A, β)	2807
95% Gamma Approximate UCL (use when n>=50)	0.00725	95% Gamma Adjusted UCL (use when n<50)	0.00725
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0907	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0611	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00426	Mean in Log Scale	-5.537
SD in Original Scale	0.00203	SD in Log Scale	0.374
95% t UCL (assumes normality of ROS data)	0.00444	95% Percentile Bootstrap UCL	0.00444
95% BCA Bootstrap UCL	0.00445	95% Bootstrap t UCL	0.00446
95% H-UCL (Log ROS)	0.00437		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00387	Mean in Log Scale	-5.653
SD in Original Scale	0.00215	SD in Log Scale	0.406
95% t UCL (Assumes normality)	0.00406	95% H-Stat UCL	0.00395
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0044	95% KM (% Bootstrap) UCL	0.0044
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***dibenzo(a,h)anthracene and dibenzo(a,c)anthracene***215-58-753-70-3***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	39
Number of Detects	25	Number of Non-Detects	337
Number of Distinct Detects	25	Number of Distinct Non-Detects	16
Minimum Detect	0.00228	Minimum Non-Detect	0.01
Maximum Detect	0.0133	Maximum Non-Detect	0.0116
Variance Detects	9.41E-06	Percent Non-Detects	93.09%
Mean Detects	0.00482	SD Detects	0.00307
Median Detects	0.00345	CV Detects	6.37E-01
Skewness Detects	1.657	Kurtosis Detects	1.973
Mean of Logged Detects	-5.484	SD of Logged Detects	0.523
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.765	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.226	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00392	Standard Error of Mean	3.33E-04
SD	0.0017	95% KM (BCA) UCL	0.00446
95% KM (t) UCL	0.00447	95% KM (Percentile Bootstrap) UCL	0.00449
95% KM (z) UCL	0.00447	95% KM Bootstrap t UCL	0.00463
90% KM Chebyshev UCL	0.00492	95% KM Chebyshev UCL	0.00537
97.5% KM Chebyshev UCL	0.006	99% KM Chebyshev UCL	0.00723

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.4	Anderson-Darling GOF Test	
5% A-D Critical Value	0.75	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.209	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.176	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	3.522	k star (bias corrected MLE)	3.126
Theta hat (MLE)	0.00137	Theta star (bias corrected MLE)	0.00154
nu hat (MLE)	176.1	nu star (bias corrected)	156.3
MLE Mean (bias corrected)	0.00482	MLE Sd (bias corrected)	0.00272

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	5.33	nu hat (KM)	3859
Approximate Chi Square Value (N/A, α)	3.72E+03	Adjusted Chi Square Value (N/A, β)	3.72E+03
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00407	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00407

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00228	Mean	0.00964
Maximum	0.0133	Median	0.01
SD	0.00154	CV	0.159
k hat (MLE)	20.78	k star (bias corrected MLE)	20.61
Theta hat (MLE)	4.64E-04	Theta star (bias corrected MLE)	4.68E-04
nu hat (MLE)	15046	nu star (bias corrected)	14923
MLE Mean (bias corrected)	0.00964	MLE Sd (bias corrected)	0.00212
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	14640	Adjusted Chi Square Value (N/A, β)	14638
95% Gamma Approximate UCL (use when $n \geq 50$)	9.83E-03	95% Gamma Adjusted UCL (use when $n < 50$)	9.83E-03

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.883	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.186	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00394	Mean in Log Scale	-5.611
SD in Original Scale	0.00162	SD in Log Scale	0.385
95% t UCL (assumes normality of ROS data)	0.00408	95% Percentile Bootstrap UCL	0.00408
95% BCA Bootstrap UCL	0.00408	95% Bootstrap t UCL	0.00409
95% H-UCL (Log ROS)	0.00408		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0052	Mean in Log Scale	-5.271
SD in Original Scale	8.12E-04	SD in Log Scale	0.15
95% t UCL (Assumes normality)	0.00527	95% H-Stat UCL	0.00527
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00447	95% KM (% Bootstrap) UCL	0.00449

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***dibenzothiophene***132-65-0***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	227

Number of Detects	312	Number of Non-Detects	50
Number of Distinct Detects	222	Number of Distinct Non-Detects	9
Minimum Detect	0.00146	Minimum Non-Detect	0.01
Maximum Detect	0.0373	Maximum Non-Detect	0.0111
Variance Detects	1.20E-05	Percent Non-Detects	13.81%
Mean Detects	0.00409	SD Detects	0.00346
Median Detects	0.00299	CV Detects	8.46E-01
Skewness Detects	4.454	Kurtosis Detects	32.75
Mean of Logged Detects	-5.703	SD of Logged Detects	0.591
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.662	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.224	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00401	Standard Error of Mean	1.78E-04
SD	0.00329	95% KM (BCA) UCL	0.00428
95% KM (t) UCL	0.0043	95% KM (Percentile Bootstrap) UCL	0.00431
95% KM (z) UCL	0.0043	95% KM Bootstrap t UCL	0.00438
90% KM Chebyshev UCL	0.00454	95% KM Chebyshev UCL	0.00478
97.5% KM Chebyshev UCL	0.00512	99% KM Chebyshev UCL	0.00578
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.89	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.115	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0517	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.617	k star (bias corrected MLE)	2.594
Theta hat (MLE)	0.00156	Theta star (bias corrected MLE)	0.00158
nu hat (MLE)	1633	nu star (bias corrected)	1619
MLE Mean (bias corrected)	0.00409	MLE Sd (bias corrected)	0.00254
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.485	nu hat (KM)	1075
Approximate Chi Square Value (N/A, α)	1000	Adjusted Chi Square Value (N/A, β)	999.8
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00431	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00431
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00146	Mean	0.0049
Maximum	0.0373	Median	0.00354
SD	0.00381	CV	0.776
k hat (MLE)	2.293	k star (bias corrected MLE)	2.276
Theta hat (MLE)	0.00214	Theta star (bias corrected MLE)	0.00215
nu hat (MLE)	1660	nu star (bias corrected)	1648
MLE Mean (bias corrected)	0.0049	MLE Sd (bias corrected)	0.00325
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1555	Adjusted Chi Square Value (N/A, β)	1554
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0052	95% Gamma Adjusted UCL (use when $n < 50$)	0.0052
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.084	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0502	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00399	Mean in Log Scale	-5.71
SD in Original Scale	0.00325	SD in Log Scale	0.567
95% t UCL (assumes normality of ROS data)	0.00428	95% Percentile Bootstrap UCL	0.00429
95% BCA Bootstrap UCL	0.00431	95% Bootstrap t UCL	0.00434
95% H-UCL (Log ROS)	0.00411		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00424	Mean in Log Scale	-5.642
SD in Original Scale	0.00323	SD in Log Scale	0.569
95% t UCL (Assumes normality)	0.00452	95% H-Stat UCL	0.00441
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (BCA) UCL	0.00428	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***fluoranthene***206-44-0***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 277
Number of Detects	349	Number of Non-Detects 13
Number of Distinct Detects	268	Number of Distinct Non-Detects 13
Minimum Detect	0.0026	Minimum Non-Detect 0.0104
Maximum Detect	0.137	Maximum Non-Detect 0.0449
Variance Detects	3.41E-04	Percent Non-Detects 3.59%
Mean Detects	0.0309	SD Detects 0.0185
Median Detects	0.0289	CV Detects 5.97E-01
Skewness Detects	1.303	Kurtosis Detects 4.312
Mean of Logged Detects	-3.679	SD of Logged Detects 0.697
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.925	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.0624	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0474	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0303	Standard Error of Mean 9.74E-04
SD	0.0185	95% KM (BCA) UCL 0.0319
95% KM (t) UCL	0.0319	95% KM (Percentile Bootstrap) UCL 0.0319
95% KM (z) UCL	0.0319	95% KM Bootstrap t UCL 0.032
90% KM Chebyshev UCL	0.0332	95% KM Chebyshev UCL 0.0345
97.5% KM Chebyshev UCL	0.0364	99% KM Chebyshev UCL 0.04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.654	Anderson-Darling GOF Test
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0613	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0492	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.615	k star (bias corrected MLE) 2.595
Theta hat (MLE)	0.0118	Theta star (bias corrected MLE) 0.0119
nu hat (MLE)	1825	nu star (bias corrected) 1811
MLE Mean (bias corrected)	0.0309	MLE Sd (bias corrected) 0.0192
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.692	nu hat (KM) 1949
Approximate Chi Square Value (N/A, α)	1848	Adjusted Chi Square Value (N/A, β) 1847
95% Gamma Approximate KM-UCL (use when n>=50)	0.032	95% Gamma Adjusted KM-UCL (use when n<50) 0.032
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0026	Mean 0.0303
Maximum	0.137	Median 0.0285
SD	0.0184	CV 0.606
k hat (MLE)	2.59	k star (bias corrected MLE) 2.571
Theta hat (MLE)	0.0117	Theta star (bias corrected MLE) 0.0118
nu hat (MLE)	1876	nu star (bias corrected) 1861
MLE Mean (bias corrected)	0.0303	MLE Sd (bias corrected) 0.0189
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1762	Adjusted Chi Square Value (N/A, β) 1762
95% Gamma Approximate UCL (use when n>=50)	0.0321	95% Gamma Adjusted UCL (use when n<50) 0.0321
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.103	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0474	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0303	Mean in Log Scale -3.704
SD in Original Scale	0.0184	SD in Log Scale 0.698

95% t UCL (assumes normality of ROS data)	0.0319	95% Percentile Bootstrap UCL	0.0319
95% BCA Bootstrap UCL	0.0319	95% Bootstrap t UCL	0.0319
95% H-UCL (Log ROS)	0.0337		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0302	Mean in Log Scale	-3.712
SD in Original Scale	0.0185	SD in Log Scale	0.71
95% t UCL (Assumes normality)	0.0318	95% H-Stat UCL	0.0338
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0319		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***fluorene***86-73-7***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	179
Number of Detects	186	Number of Non-Detects	176
Number of Distinct Detects	170	Number of Distinct Non-Detects	13
Minimum Detect	0.00198	Minimum Non-Detect	0.01
Maximum Detect	0.06	Maximum Non-Detect	0.0116
Variance Detects	9.89E-05	Percent Non-Detects	48.62%
Mean Detects	0.0103	SD Detects	0.00994
Median Detects	0.00663	CV Detects	9.67E-01
Skewness Detects	2.165	Kurtosis Detects	5.448
Mean of Logged Detects	-4.935	SD of Logged Detects	0.824
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.754	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.202	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.065	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0077	Standard Error of Mean	4.32E-04
SD	0.00777	95% KM (BCA) UCL	0.0084
95% KM (t) UCL	0.00841	95% KM (Percentile Bootstrap) UCL	0.00844
95% KM (z) UCL	0.00841	95% KM Bootstrap t UCL	0.00851
90% KM Chebyshev UCL	0.00899	95% KM Chebyshev UCL	0.00958
97.5% KM Chebyshev UCL	0.0104	99% KM Chebyshev UCL	0.012
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.208	Anderson-Darling GOF Test	
5% A-D Critical Value	0.771	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0685	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.544	k star (bias corrected MLE)	1.522
Theta hat (MLE)	0.00666	Theta star (bias corrected MLE)	0.00676
nu hat (MLE)	574.3	nu star (bias corrected)	566.3
MLE Mean (bias corrected)	0.0103	MLE Sd (bias corrected)	0.00834
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.98	nu hat (KM)	709.7
Approximate Chi Square Value (709.72, α)	648.9	Adjusted Chi Square Value (709.72, β)	648.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.00842	95% Gamma Adjusted KM-UCL (use when n<50)	0.00842
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00198	Mean	0.0102
Maximum	0.06	Median	0.01
SD	0.00713	CV	0.697
k hat (MLE)	2.866	k star (bias corrected MLE)	2.844
Theta hat (MLE)	0.00357	Theta star (bias corrected MLE)	0.0036
nu hat (MLE)	2075	nu star (bias corrected)	2059

MLE Mean (bias corrected)	0.0102	MLE Sd (bias corrected)	0.00607
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1955	Adjusted Chi Square Value (N/A, β)	1954
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0108	95% Gamma Adjusted UCL (use when $n < 50$)	0.0108
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0995	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.065	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00785	Mean in Log Scale	-5.144
SD in Original Scale	0.00774	SD in Log Scale	0.723
95% t UCL (assumes normality of ROS data)	0.00852	95% Percentile Bootstrap UCL	0.00852
95% BCA Bootstrap UCL	0.00856	95% Bootstrap t UCL	0.00862
95% H-UCL (Log ROS)	0.00815		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00782	Mean in Log Scale	-5.092
SD in Original Scale	0.00756	SD in Log Scale	0.612
95% t UCL (Assumes normality)	0.00847	95% H-Stat UCL	0.00787
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00841	95% KM (% Bootstrap) UCL	0.00844
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***indeno(1,2,3-c,d)pyrene***193-39-5***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	184
Number of Detects	211	Number of Non-Detects	151
Number of Distinct Detects	171	Number of Distinct Non-Detects	15
Minimum Detect	0.00188	Minimum Non-Detect	0.01
Maximum Detect	0.0265	Maximum Non-Detect	0.0119
Variance Detects	9.73E-06	Percent Non-Detects	41.71%
Mean Detects	0.00421	SD Detects	0.00312
Median Detects	0.00322	CV Detects	7.40E-01
Skewness Detects	3.609	Kurtosis Detects	17.61
Mean of Logged Detects	-5.622	SD of Logged Detects	0.498
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.648	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.227	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.061	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00402	Standard Error of Mean	1.61E-04
SD	0.00265	95% KM (BCA) UCL	0.00428
95% KM (t) UCL	0.00429	95% KM (Percentile Bootstrap) UCL	0.00429
95% KM (z) UCL	0.00429	95% KM Bootstrap t UCL	0.00431
90% KM Chebyshev UCL	0.00451	95% KM Chebyshev UCL	0.00473
97.5% KM Chebyshev UCL	0.00503	99% KM Chebyshev UCL	0.00563
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.981	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.162	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0627	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.433	k star (bias corrected MLE)	3.387
Theta hat (MLE)	0.00123	Theta star (bias corrected MLE)	0.00124
nu hat (MLE)	1449	nu star (bias corrected)	1429
MLE Mean (bias corrected)	0.00421	MLE Sd (bias corrected)	0.00229
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.297	nu hat (KM)	1663
Approximate Chi Square Value (N/A, α)	1570	Adjusted Chi Square Value (N/A, β)	1569

95% Gamma Approximate KM-UCL (use when n>=50)	0.00426	95% Gamma Adjusted KM-UCL (use when n<50)	0.00427
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00188	Mean	0.00663
Maximum	0.0265	Median	0.006
SD	0.00372	CV	0.561
k hat (MLE)	2.912	k star (bias corrected MLE)	2.89
Theta hat (MLE)	0.00228	Theta star (bias corrected MLE)	0.00229
nu hat (MLE)	2108	nu star (bias corrected)	2092
MLE Mean (bias corrected)	0.00663	MLE Sd (bias corrected)	0.0039
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1987	Adjusted Chi Square Value (N/A, β)	1986
95% Gamma Approximate UCL (use when n>=50)	0.00698	95% Gamma Adjusted UCL (use when n<50)	0.00698
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.121	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.061	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00402	Mean in Log Scale	-5.637
SD in Original Scale	0.00255	SD in Log Scale	0.451
95% t UCL (assumes normality of ROS data)	0.00424	95% Percentile Bootstrap UCL	0.00425
95% BCA Bootstrap UCL	0.00428	95% Bootstrap t UCL	0.00429
95% H-UCL (Log ROS)	0.00412		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00463	Mean in Log Scale	-5.47
SD in Original Scale	0.00243	SD in Log Scale	0.421
95% t UCL (Assumes normality)	0.00484	95% H-Stat UCL	0.00478
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00429	95% KM (% Bootstrap) UCL	0.00429
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***naphthalene***91-20-3***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	253
Number of Detects	267	Number of Non-Detects	95
Number of Distinct Detects	244	Number of Distinct Non-Detects	14
Minimum Detect	0.00243	Minimum Non-Detect	0.01
Maximum Detect	0.473	Maximum Non-Detect	0.0149
Variance Detects	0.00243	Percent Non-Detects	26.24%
Mean Detects	0.0221	SD Detects	0.0493
Median Detects	0.00701	CV Detects	2.227
Skewness Detects	6.078	Kurtosis Detects	46.34
Mean of Logged Detects	-4.663	SD of Logged Detects	1.127
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.415	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.345	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0542	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0177	Standard Error of Mean	0.00226
SD	0.0429	95% KM (BCA) UCL	0.0216
95% KM (t) UCL	0.0214	95% KM (Percentile Bootstrap) UCL	0.0215
95% KM (z) UCL	0.0214	95% KM Bootstrap t UCL	0.0233
90% KM Chebyshev UCL	0.0244	95% KM Chebyshev UCL	0.0275
97.5% KM Chebyshev UCL	0.0318	99% KM Chebyshev UCL	0.0401
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	18.93	Anderson-Darling GOF Test	
5% A-D Critical Value	0.801	Detected Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.207	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0583	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.709	k star (bias corrected MLE)	0.703
Theta hat (MLE)	0.0312	Theta star (bias corrected MLE)	0.0314
nu hat (MLE)	378.5	nu star (bias corrected)	375.6
MLE Mean (bias corrected)	0.0221	MLE Sd (bias corrected)	0.0264
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.169	nu hat (KM)	122.6
Approximate Chi Square Value (122.61, α)	98.04	Adjusted Chi Square Value (122.61, β)	97.95
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0221	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0221
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00243	Mean	0.0191
Maximum	0.473	Median	0.01
SD	0.0426	CV	2.228
k hat (MLE)	0.868	k star (bias corrected MLE)	0.863
Theta hat (MLE)	0.022	Theta star (bias corrected MLE)	0.0222
nu hat (MLE)	628.5	nu star (bias corrected)	624.7
MLE Mean (bias corrected)	0.0191	MLE Sd (bias corrected)	0.0206
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (624.67, α)	567.7	Adjusted Chi Square Value (624.67, β)	567.5
95% Gamma Approximate UCL (use when $n \geq 50$)	0.021	95% Gamma Adjusted UCL (use when $n < 50$)	0.021
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.12	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0542	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0179	Mean in Log Scale	-4.816
SD in Original Scale	0.0429	SD in Log Scale	1.046
95% t UCL (assumes normality of ROS data)	0.0216	95% Percentile Bootstrap UCL	0.0218
95% BCA Bootstrap UCL	0.0228	95% Bootstrap t UCL	0.0232
95% H-UCL (Log ROS)	0.0158		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0177	Mean in Log Scale	-4.818
SD in Original Scale	0.0429	SD in Log Scale	1.002
95% t UCL (Assumes normality)	0.0214	95% H-Stat UCL	0.0149
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.0275		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***naphthobenzothiophene***nbt***ug/l***t)			
General Statistics			
Total Number of Observations	27	Number of Distinct Observations	22
Number of Detects	18	Number of Non-Detects	9
Number of Distinct Detects	18	Number of Distinct Non-Detects	5
Minimum Detect	0.00176	Minimum Non-Detect	0.0102
Maximum Detect	0.014	Maximum Non-Detect	0.0109
Variance Detects	9.29E-06	Percent Non-Detects	33.33%
Mean Detects	0.00503	SD Detects	0.00305
Median Detects	0.00419	CV Detects	6.06E-01
Skewness Detects	2	Kurtosis Detects	4.062
Mean of Logged Detects	-5.423	SD of Logged Detects	0.5
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.775	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.241	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00472	Standard Error of Mean	5.46E-04
SD	0.00258	95% KM (BCA) UCL	0.0057
95% KM (t) UCL	0.00565	95% KM (Percentile Bootstrap) UCL	0.00568
95% KM (z) UCL	0.00562	95% KM Bootstrap t UCL	0.006
90% KM Chebyshev UCL	0.00636	95% KM Chebyshev UCL	0.0071
97.5% KM Chebyshev UCL	0.00813	99% KM Chebyshev UCL	0.0102

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.731	Anderson-Darling GOF Test	
5% A-D Critical Value	0.743	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.178	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.205	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	3.991	k star (bias corrected MLE)	3.363
Theta hat (MLE)	0.00126	Theta star (bias corrected MLE)	0.0015
nu hat (MLE)	143.7	nu star (bias corrected)	121.1
MLE Mean (bias corrected)	0.00503	MLE Sd (bias corrected)	0.00274

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.348	nu hat (KM)	180.8
Approximate Chi Square Value (180.79, α)	150.7	Adjusted Chi Square Value (180.79, β)	148.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.00566	95% Gamma Adjusted KM-UCL (use when n<50)	0.00573

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00176	Mean	0.00669
Maximum	0.014	Median	0.00531
SD	0.00343	CV	0.513
k hat (MLE)	3.663	k star (bias corrected MLE)	3.281
Theta hat (MLE)	0.00183	Theta star (bias corrected MLE)	0.00204
nu hat (MLE)	197.8	nu star (bias corrected)	177.2
MLE Mean (bias corrected)	0.00669	MLE Sd (bias corrected)	0.00369
		Adjusted Level of Significance (β)	0.0401
Approximate Chi Square Value (177.16, α)	147.4	Adjusted Chi Square Value (177.16, β)	145.6
95% Gamma Approximate UCL (use when n>=50)	0.00804	95% Gamma Adjusted UCL (use when n<50)	0.00813

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.142	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00472	Mean in Log Scale	-5.454
SD in Original Scale	0.00255	SD in Log Scale	0.423
95% t UCL (assumes normality of ROS data)	0.00556	95% Percentile Bootstrap UCL	0.00555
95% BCA Bootstrap UCL	0.00582	95% Bootstrap t UCL	0.00628
95% H-UCL (Log ROS)	0.00548		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.466	95% H-UCL (KM -Log)	0.00553
KM SD (logged)	0.446	95% Critical H Value (KM-Log)	1.926
KM Standard Error of Mean (logged)	0.101		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00512	Mean in Log Scale	-5.362
SD in Original Scale	0.00247	SD in Log Scale	0.414
95% t UCL (Assumes normality)	0.00593	95% H-Stat UCL	0.00596
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (Percentile Bootstrap) UCL	0.00568	95% GROS Adjusted Gamma UCL	0.00813
95% Adjusted Gamma KM-UCL	0.00573		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***perylene***198-55-0***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	56
Number of Detects	43	Number of Non-Detects	319
Number of Distinct Detects	41	Number of Distinct Non-Detects	16
Minimum Detect	0.00205	Minimum Non-Detect	0.01
Maximum Detect	0.0121	Maximum Non-Detect	0.0116
Variance Detects	4.63E-06	Percent Non-Detects	88.12%
Mean Detects	0.0047	SD Detects	0.00215
Median Detects	0.00444	CV Detects	4.58E-01
Skewness Detects	1.783	Kurtosis Detects	3.609
Mean of Logged Detects	-5.444	SD of Logged Detects	0.397
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.829	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.208	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.135	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0044	Standard Error of Mean	2.42E-04
SD	0.00161	95% KM (BCA) UCL	0.00484
95% KM (t) UCL	0.0048	95% KM (Percentile Bootstrap) UCL	0.0048
95% KM (z) UCL	0.0048	95% KM Bootstrap t UCL	0.00485
90% KM Chebyshev UCL	5.13E-03	95% KM Chebyshev UCL	5.45E-03
97.5% KM Chebyshev UCL	0.00591	99% KM Chebyshev UCL	0.0068
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.95	Anderson-Darling GOF Test	
5% A-D Critical Value	0.751	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.15	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.135	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.204	k star (bias corrected MLE)	5.786
Theta hat (MLE)	7.57E-04	Theta star (bias corrected MLE)	8.11E-04
nu hat (MLE)	533.5	nu star (bias corrected)	497.6
MLE Mean (bias corrected)	0.0047	MLE Sd (bias corrected)	0.00195
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	7.431	nu hat (KM)	5380
Approximate Chi Square Value (N/A, α)	5.21E+03	Adjusted Chi Square Value (N/A, β)	5.21E+03
95% Gamma Approximate KM-UCL (use when n>=50)	0.00454	95% Gamma Adjusted KM-UCL (use when n<50)	0.00455
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00205	Mean	0.00937
Maximum	0.0121	Median	0.01
SD	0.00187	CV	0.199
k hat (MLE)	14.64	k star (bias corrected MLE)	14.52
Theta hat (MLE)	6.40E-04	Theta star (bias corrected MLE)	6.45E-04
nu hat (MLE)	10597	nu star (bias corrected)	10511
MLE Mean (bias corrected)	0.00937	MLE Sd (bias corrected)	0.00246
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	10273	Adjusted Chi Square Value (N/A, β)	10272
95% Gamma Approximate UCL (use when n>=50)	0.00959	95% Gamma Adjusted UCL (use when n<50)	0.00959
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.96	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.135	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00438	Mean in Log Scale	-5.486
SD in Original Scale	0.00151	SD in Log Scale	0.331
95% t UCL (assumes normality of ROS data)	0.00451	95% Percentile Bootstrap UCL	0.0045
95% BCA Bootstrap UCL	0.00452	95% Bootstrap t UCL	0.00451
95% H-UCL (Log ROS)	0.00451		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			

KM Mean (logged)	-5.486	95% H-UCL (KM -Log)	0.00453
KM SD (logged)	0.342	95% Critical H Value (KM-Log)	1.727
KM Standard Error of Mean (logged)	0.0527		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00516	Mean in Log Scale	-5.277
SD in Original Scale	7.69E-04	SD in Log Scale	0.151
95% t UCL (Assumes normality)	0.00523	95% H-Stat UCL	0.00524
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0048	95% KM (% Bootstrap) UCL	0.0048
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***phenanthrene***85-01-8***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	253
Number of Detects	289	Number of Non-Detects	73
Number of Distinct Detects	245	Number of Distinct Non-Detects	14
Minimum Detect	0.00243	Minimum Non-Detect	0.01
Maximum Detect	0.218	Maximum Non-Detect	0.0133
Variance Detects	3.51E-04	Percent Non-Detects	20.17%
Mean Detects	0.0126	SD Detects	0.0187
Median Detects	0.0065	CV Detects	1.49E+00
Skewness Detects	5.849	Kurtosis Detects	52.5
Mean of Logged Detects	-4.857	SD of Logged Detects	0.876
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.533	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.294	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0521	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0111	Standard Error of Mean	8.97E-04
SD	0.017	95% KM (BCA) UCL	0.0126
95% KM (t) UCL	0.0126	95% KM (Percentile Bootstrap) UCL	0.0126
95% KM (z) UCL	0.0125	95% KM Bootstrap t UCL	0.013
90% KM Chebyshev UCL	0.0138	95% KM Chebyshev UCL	0.015
97.5% KM Chebyshev UCL	0.0167	99% KM Chebyshev UCL	0.02
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	14.04	Anderson-Darling GOF Test	
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.167	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0548	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.181	k star (bias corrected MLE)	1.171
Theta hat (MLE)	0.0106	Theta star (bias corrected MLE)	0.0107
nu hat (MLE)	682.4	nu star (bias corrected)	676.6
MLE Mean (bias corrected)	0.0126	MLE Sd (bias corrected)	0.0116
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.424	nu hat (KM)	307.1
Approximate Chi Square Value (307.15, α)	267.5	Adjusted Chi Square Value (307.15, β)	267.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.0127	95% Gamma Adjusted KM-UCL (use when n<50)	0.0127
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00243	Mean	0.0121
Maximum	0.218	Median	0.00842
SD	0.0168	CV	1.384
k hat (MLE)	1.437	k star (bias corrected MLE)	1.427
Theta hat (MLE)	0.00843	Theta star (bias corrected MLE)	0.00849
nu hat (MLE)	1040	nu star (bias corrected)	1033

MLE Mean (bias corrected)	0.0121	MLE Sd (bias corrected)	0.0101
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	959.3	Adjusted Chi Square Value (N/A, β)	959
95% Gamma Approximate UCL (use when $n \geq 50$)	0.013	95% Gamma Adjusted UCL (use when $n < 50$)	0.013
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0957	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0521	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0112	Mean in Log Scale	-4.936
SD in Original Scale	0.017	SD in Log Scale	0.824
95% t UCL (assumes normality of ROS data)	0.0127	95% Percentile Bootstrap UCL	0.0128
95% BCA Bootstrap UCL	0.0133	95% Bootstrap t UCL	0.0131
95% H-UCL (Log ROS)	0.011		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0111	Mean in Log Scale	-4.936
SD in Original Scale	0.017	SD in Log Scale	0.799
95% t UCL (Assumes normality)	0.0126	95% H-Stat UCL	0.0107
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0126		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***pyrene***129-00-0***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	289
Number of Detects	351	Number of Non-Detects	11
Number of Distinct Detects	282	Number of Distinct Non-Detects	11
Minimum Detect	0.00218	Minimum Non-Detect	0.0156
Maximum Detect	0.156	Maximum Non-Detect	0.0505
Variance Detects	5.25E-04	Percent Non-Detects	3.04%
Mean Detects	0.0379	SD Detects	0.0229
Median Detects	0.0347	CV Detects	0.605
Skewness Detects	1.843	Kurtosis Detects	6.447
Mean of Logged Detects	-3.461	SD of Logged Detects	0.669
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.872	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0929	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0473	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0373	Standard Error of Mean	0.0012
SD	0.0228	95% KM (BCA) UCL	0.0394
95% KM (t) UCL	0.0393	95% KM (Percentile Bootstrap) UCL	0.0393
95% KM (z) UCL	0.0393	95% KM Bootstrap t UCL	0.0394
90% KM Chebyshev UCL	0.0409	95% KM Chebyshev UCL	0.0425
97.5% KM Chebyshev UCL	0.0448	99% KM Chebyshev UCL	0.0493
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.384	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0563	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.049	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.817	k star (bias corrected MLE)	2.795
Theta hat (MLE)	0.0134	Theta star (bias corrected MLE)	0.0136
nu hat (MLE)	1978	nu star (bias corrected)	1962
MLE Mean (bias corrected)	0.0379	MLE Sd (bias corrected)	0.0227
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.664	nu hat (KM)	1929
Approximate Chi Square Value (N/A, α)	1828	Adjusted Chi Square Value (N/A, β)	1827

95% Gamma Approximate KM-UCL (use when n>=50)	0.0394	95% Gamma Adjusted KM-UCL (use when n<50)	0.0394
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00218	Mean	0.0373
Maximum	0.156	Median	0.0342
SD	0.0228	CV	0.613
k hat (MLE)	2.787	k star (bias corrected MLE)	2.766
Theta hat (MLE)	0.0134	Theta star (bias corrected MLE)	0.0135
nu hat (MLE)	2018	nu star (bias corrected)	2003
MLE Mean (bias corrected)	0.0373	MLE Sd (bias corrected)	0.0224
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1900	Adjusted Chi Square Value (N/A, β)	1899
95% Gamma Approximate UCL (use when n>=50)	0.0393	95% Gamma Adjusted UCL (use when n<50)	0.0393
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.085	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0473	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0373	Mean in Log Scale	-3.479
SD in Original Scale	0.0228	SD in Log Scale	0.668
95% t UCL (assumes normality of ROS data)	0.0393	95% Percentile Bootstrap UCL	0.0393
95% BCA Bootstrap UCL	0.0393	95% Bootstrap t UCL	0.0394
95% H-UCL (Log ROS)	0.0412		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0372	Mean in Log Scale	-3.485
SD in Original Scale	0.0229	SD in Log Scale	0.676
95% t UCL (Assumes normality)	0.0392	95% H-Stat UCL	0.0412
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0394		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***retene***483-65-8***ug/l****)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	43
Number of Detects	28	Number of Non-Detects	334
Number of Distinct Detects	27	Number of Distinct Non-Detects	16
Minimum Detect	0.00233	Minimum Non-Detect	0.01
Maximum Detect	0.107	Maximum Non-Detect	0.0116
Variance Detects	3.90E-04	Percent Non-Detects	92.27%
Mean Detects	0.00991	SD Detects	0.0198
Median Detects	0.00438	CV Detects	2.00E+00
Skewness Detects	4.734	Kurtosis Detects	23.65
Mean of Logged Detects	-5.186	SD of Logged Detects	0.85
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.376	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.351	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00486	Standard Error of Mean	5.01E-04
SD	0.00589	95% KM (BCA) UCL	0.00574
95% KM (t) UCL	0.00569	95% KM (Percentile Bootstrap) UCL	0.00575
95% KM (z) UCL	0.00569	95% KM Bootstrap t UCL	0.006
90% KM Chebyshev UCL	0.00637	95% KM Chebyshev UCL	0.00705
97.5% KM Chebyshev UCL	0.00799	99% KM Chebyshev UCL	0.00985
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.967	Anderson-Darling GOF Test	
5% A-D Critical Value	0.774	Detected Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.253	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.17	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.009	k star (bias corrected MLE)	0.924
Theta hat (MLE)	0.00982	Theta star (bias corrected MLE)	0.0107
nu hat (MLE)	56.48	nu star (bias corrected)	51.76
MLE Mean (bias corrected)	0.00991	MLE Sd (bias corrected)	0.0103
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.683	nu hat (KM)	494.2
Approximate Chi Square Value (494.22, α)	4.44E+02	Adjusted Chi Square Value (494.22, β)	4.44E+02
95% Gamma Approximate KM-UCL (use when n>=50)	0.00542	95% Gamma Adjusted KM-UCL (use when n<50)	0.00542
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00233	Mean	0.0107
Maximum	0.107	Median	0.01
SD	0.00587	CV	0.546
k hat (MLE)	8.498	k star (bias corrected MLE)	8.429
Theta hat (MLE)	0.00126	Theta star (bias corrected MLE)	0.00127
nu hat (MLE)	6153	nu star (bias corrected)	6103
MLE Mean (bias corrected)	0.0107	MLE Sd (bias corrected)	0.0037
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	5922	Adjusted Chi Square Value (N/A, β)	5922
95% Gamma Approximate UCL (use when n>=50)	0.0111	95% Gamma Adjusted UCL (use when n<50)	0.0111
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.834	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.17	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00526	Mean in Log Scale	-5.443
SD in Original Scale	0.00611	SD in Log Scale	0.57
95% t UCL (assumes normality of ROS data)	0.00579	95% Percentile Bootstrap UCL	0.00583
95% BCA Bootstrap UCL	0.00616	95% Bootstrap t UCL	0.00627
95% H-UCL (Log ROS)	0.00538		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00558	Mean in Log Scale	-5.251
SD in Original Scale	0.00555	SD in Log Scale	0.235
95% t UCL (Assumes normality)	0.00606	95% H-Stat UCL	0.0055
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00569	95% KM (% Bootstrap) UCL	0.00575
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***total cpah teq (epa 1993) (km) (rl)***tcpahtef7ma_km_rl***ug/l****)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	351
Number of Detects	102	Number of Non-Detects	260
Number of Distinct Detects	102	Number of Distinct Non-Detects	249
Minimum Detect	0.00885	Minimum Non-Detect	0.01
Maximum Detect	0.0665	Maximum Non-Detect	0.0241
Variance Detects	9.33E-05	Percent Non-Detects	71.82%
Mean Detects	0.0155	SD Detects	0.00966
Median Detects	0.0119	CV Detects	6.22E-01
Skewness Detects	3.491	Kurtosis Detects	12.87
Mean of Logged Detects	-4.264	SD of Logged Detects	0.384
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.509	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	

Lilliefors Test Statistic	0.306	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0877	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0115	Standard Error of Mean	3.24E-04
SD	0.00582	95% KM (BCA) UCL	0.0124
95% KM (t) UCL	0.012	95% KM (Percentile Bootstrap) UCL	0.0122
95% KM (z) UCL	0.012	95% KM Bootstrap t UCL	0.0122
90% KM Chebyshev UCL	0.0125	95% KM Chebyshev UCL	0.0129
97.5% KM Chebyshev UCL	0.0135	99% KM Chebyshev UCL	0.0147
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	15.38	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.309	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0891	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.211	k star (bias corrected MLE)	5.064
Theta hat (MLE)	0.00298	Theta star (bias corrected MLE)	0.00307
nu hat (MLE)	1063	nu star (bias corrected)	1033
MLE Mean (bias corrected)	0.0155	MLE Sd (bias corrected)	0.0069
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.916	nu hat (KM)	2836
Approximate Chi Square Value (N/A, α)	2713	Adjusted Chi Square Value (N/A, β)	2712
95% Gamma Approximate KM-UCL (use when n>=50)	0.012	95% Gamma Adjusted KM-UCL (use when n<50)	0.012
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00885	Mean	0.0116
Maximum	0.0665	Median	0.01
SD	0.00569	CV	0.492
k hat (MLE)	10.43	k star (bias corrected MLE)	10.34
Theta hat (MLE)	0.00111	Theta star (bias corrected MLE)	0.00112
nu hat (MLE)	7549	nu star (bias corrected)	7487
MLE Mean (bias corrected)	0.0116	MLE Sd (bias corrected)	0.00359
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	7287	Adjusted Chi Square Value (N/A, β)	7287
95% Gamma Approximate UCL (use when n>=50)	0.0119	95% Gamma Adjusted UCL (use when n<50)	0.0119
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.299	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0877	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00997	Mean in Log Scale	-4.694
SD in Original Scale	0.00624	SD in Log Scale	0.355
95% t UCL (assumes normality of ROS data)	0.0105	95% Percentile Bootstrap UCL	0.0105
95% BCA Bootstrap UCL	0.0106	95% Bootstrap t UCL	0.0106
95% H-UCL (Log ROS)	0.0101		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00945	Mean in Log Scale	-4.78
SD in Original Scale	0.00655	SD in Log Scale	0.431
95% t UCL (Assumes normality)	0.01	95% H-Stat UCL	0.0096
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.012	95% KM (% Bootstrap) UCL	0.0122
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***total hpah (10 of 17) (km) (rl)***tpah_17_hm_km_ri***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	362

Number of Detects	294	Number of Non-Detects	68
Number of Distinct Detects	294	Number of Distinct Non-Detects	68
Minimum Detect	0.0512	Minimum Non-Detect	0.0156
Maximum Detect	0.604	Maximum Non-Detect	0.109
Variance Detects	4.12E-03	Percent Non-Detects	18.78%
Mean Detects	0.123	SD Detects	0.0642
Median Detects	0.111	CV Detects	5.20E-01
Skewness Detects	3.718	Kurtosis Detects	20.07
Mean of Logged Detects	-2.177	SD of Logged Detects	0.384
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.697	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.179	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0517	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.104	Standard Error of Mean	3.73E-03
SD	0.0705	95% KM (BCA) UCL	0.111
95% KM (t) UCL	0.11	95% KM (Percentile Bootstrap) UCL	0.111
95% KM (z) UCL	0.11	95% KM Bootstrap t UCL	0.111
90% KM Chebyshev UCL	0.115	95% KM Chebyshev UCL	0.12
97.5% KM Chebyshev UCL	0.127	99% KM Chebyshev UCL	0.141
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.724	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.108	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0529	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.05	k star (bias corrected MLE)	5.991
Theta hat (MLE)	0.0204	Theta star (bias corrected MLE)	0.0206
nu hat (MLE)	3558	nu star (bias corrected)	3523
MLE Mean (bias corrected)	1.23E-01	MLE Sd (bias corrected)	0.0504
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.182	nu hat (KM)	1580
Approximate Chi Square Value (N/A, α)	1488	Adjusted Chi Square Value (N/A, β)	1488
95% Gamma Approximate KM-UCL (use when n>=50)	0.111	95% Gamma Adjusted KM-UCL (use when n<50)	0.111
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0231	Mean	0.105
Maximum	0.604	Median	0.0994
SD	0.0691	CV	0.657
k hat (MLE)	2.648	k star (bias corrected MLE)	2.628
Theta hat (MLE)	0.0398	Theta star (bias corrected MLE)	0.0401
nu hat (MLE)	1917	nu star (bias corrected)	1903
MLE Mean (bias corrected)	0.105	MLE Sd (bias corrected)	0.0649
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1802	Adjusted Chi Square Value (N/A, β)	1802
95% Gamma Approximate UCL (use when n>=50)	0.111	95% Gamma Adjusted UCL (use when n<50)	0.111
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0728	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0517	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.11	Mean in Log Scale	-2.326
SD in Original Scale	0.0644	SD in Log Scale	0.465
95% t UCL (assumes normality of ROS data)	0.115	95% Percentile Bootstrap UCL	0.116
95% BCA Bootstrap UCL	0.116	95% Bootstrap t UCL	0.116
95% H-UCL (Log ROS)	0.114		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.105	Mean in Log Scale	-2.466
SD in Original Scale	0.0694	SD in Log Scale	0.711
95% t UCL (Assumes normality)	0.111	95% H-Stat UCL	0.117
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (BCA) UCL	0.111	
<p>Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.</p> <p>These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.</p>		
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***total lpah (7 of 17) (km) (rl)***tpah_17_lm_km_ri***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 357
Number of Detects	230	Number of Non-Detects 132
Number of Distinct Detects	230	Number of Distinct Non-Detects 127
Minimum Detect	0.0269	Minimum Non-Detect 0.01
Maximum Detect	0.865	Maximum Non-Detect 0.0521
Variance Detects	0.0136	Percent Non-Detects 36.46%
Mean Detects	0.109	SD Detects 0.117
Median Detects	0.0652	CV Detects 1.072
Skewness Detects	3.405	Kurtosis Detects 15.04
Mean of Logged Detects	-2.543	SD of Logged Detects 0.745
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.641	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.242	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0584	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0747	Standard Error of Mean 0.00546
SD	0.104	95% KM (BCA) UCL 0.0835
95% KM (t) UCL	0.0837	95% KM (Percentile Bootstrap) UCL 0.0841
95% KM (z) UCL	0.0837	95% KM Bootstrap t UCL 0.0852
90% KM Chebyshev UCL	0.0911	95% KM Chebyshev UCL 0.0985
97.5% KM Chebyshev UCL	0.109	99% KM Chebyshev UCL 0.129
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	8.156	Anderson-Darling GOF Test
5% A-D Critical Value	0.77	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.145	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0612	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.675	k star (bias corrected MLE) 1.656
Theta hat (MLE)	0.0651	Theta star (bias corrected MLE) 0.0658
nu hat (MLE)	770.6	nu star (bias corrected) 761.9
MLE Mean (bias corrected)	0.109	MLE Sd (bias corrected) 0.0847
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.521	nu hat (KM) 377.1
Approximate Chi Square Value (377.11, α)	333.1	Adjusted Chi Square Value (377.11, β) 332.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.0846	95% Gamma Adjusted KM-UCL (use when n<50) 0.0846
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.0729
Maximum	0.865	Median 0.0388
SD	0.105	CV 1.434
k hat (MLE)	0.868	k star (bias corrected MLE) 0.862
Theta hat (MLE)	0.084	Theta star (bias corrected MLE) 0.0846
nu hat (MLE)	628.3	nu star (bias corrected) 624.4
MLE Mean (bias corrected)	0.0729	MLE Sd (bias corrected) 0.0785
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (624.38, α)	567.4	Adjusted Chi Square Value (624.38, β) 567.2
95% Gamma Approximate UCL (use when n>=50)	0.0802	95% Gamma Adjusted UCL (use when n<50) 0.0803
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.106	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0584	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0753	Mean in Log Scale -3.121
SD in Original Scale	0.103	SD in Log Scale 0.974

95% t UCL (assumes normality of ROS data)	0.0842	95% Percentile Bootstrap UCL	0.0847
95% BCA Bootstrap UCL	0.0856	95% Bootstrap t UCL	0.086
95% H-UCL (Log ROS)	0.079		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0751	Mean in Log Scale	-3.14
SD in Original Scale	0.103	SD in Log Scale	1.008
95% t UCL (Assumes normality)	0.0841	95% H-Stat UCL	0.0806
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0835		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (polycyclic aromatic hydrocarbons (ug/l)***total pah (17) (km) (rl)***tpah_17_km_ri***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	362
Number of Detects	313	Number of Non-Detects	49
Number of Distinct Detects	313	Number of Distinct Non-Detects	49
Minimum Detect	0.0632	Minimum Non-Detect	0.0355
Maximum Detect	1.163	Maximum Non-Detect	0.185
Variance Detects	0.0191	Percent Non-Detects	13.54%
Mean Detects	0.204	SD Detects	0.138
Median Detects	0.166	CV Detects	0.677
Skewness Detects	3.372	Kurtosis Detects	15.66
Mean of Logged Detects	-1.727	SD of Logged Detects	0.484
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.686	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.208	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0501	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.186	Standard Error of Mean	0.00722
SD	0.137	95% KM (BCA) UCL	0.198
95% KM (t) UCL	0.198	95% KM (Percentile Bootstrap) UCL	0.198
95% KM (z) UCL	0.198	95% KM Bootstrap t UCL	0.2
90% KM Chebyshev UCL	0.208	95% KM Chebyshev UCL	0.218
97.5% KM Chebyshev UCL	0.231	99% KM Chebyshev UCL	0.258
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	9.159	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.147	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0515	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.781	k star (bias corrected MLE)	3.747
Theta hat (MLE)	0.054	Theta star (bias corrected MLE)	0.0545
nu hat (MLE)	2367	nu star (bias corrected)	2346
MLE Mean (bias corrected)	0.204	MLE Sd (bias corrected)	0.105
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.859	nu hat (KM)	1346
Approximate Chi Square Value (N/A, α)	1262	Adjusted Chi Square Value (N/A, β)	1261
95% Gamma Approximate KM-UCL (use when n>=50)	0.199	95% Gamma Adjusted KM-UCL (use when n<50)	0.199
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.181
Maximum	1.163	Median	0.157
SD	0.142	CV	0.784
k hat (MLE)	1.846	k star (bias corrected MLE)	1.833
Theta hat (MLE)	0.0979	Theta star (bias corrected MLE)	0.0986
nu hat (MLE)	1337	nu star (bias corrected)	1327

MLE Mean (bias corrected)	0.181	MLE Sd (bias corrected)	0.134
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1243	Adjusted Chi Square Value (N/A, β)	1243
95% Gamma Approximate UCL (use when n>=50)	0.193	95% Gamma Adjusted UCL (use when n<50)	0.193
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.106	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0501	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.187	Mean in Log Scale	-1.846
SD in Original Scale	0.136	SD in Log Scale	0.548
95% t UCL (assumes normality of ROS data)	0.199	95% Percentile Bootstrap UCL	0.198
95% BCA Bootstrap UCL	0.2	95% Bootstrap t UCL	0.201
95% H-UCL (Log ROS)	0.193		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.183	Mean in Log Scale	-1.903
SD in Original Scale	0.139	SD in Log Scale	0.643
95% t UCL (Assumes normality)	0.195	95% H-Stat UCL	0.195
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.198		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (semivolatile organics (ug/l)***2,4-dinitrotoluene***121-14-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	22
Number of Detects	4	Number of Non-Detects	358
Number of Distinct Detects	4	Number of Distinct Non-Detects	18
Minimum Detect	0.56	Minimum Non-Detect	0.5
Maximum Detect	1.8	Maximum Non-Detect	1.9
Variance Detects	0.393	Percent Non-Detects	98.90%
Mean Detects	1.118	SD Detects	0.627
Median Detects	1.055	CV Detects	0.561
Skewness Detects	0.189	Kurtosis Detects	-4.86
Mean of Logged Detects	-0.0202	SD of Logged Detects	0.602
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.849	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.291	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.512	Standard Error of Mean	0.00708
SD	0.0885	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.524	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.524	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.533	95% KM Chebyshev UCL	0.543
97.5% KM Chebyshev UCL	0.556	99% KM Chebyshev UCL	0.583
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.499	Anderson-Darling GOF Test	
5% A-D Critical Value	0.659	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.321	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.396	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.967	k star (bias corrected MLE)	1.158
Theta hat (MLE)	0.282	Theta star (bias corrected MLE)	0.965
nu hat (MLE)	31.73	nu star (bias corrected)	9.267
MLE Mean (bias corrected)	1.118	MLE Sd (bias corrected)	1.038
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	33.46	nu hat (KM)	24224
Approximate Chi Square Value (N/A, α)	23863	Adjusted Chi Square Value (N/A, β)	23862

95% Gamma Approximate KM-UCL (use when n>=50)	0.52	95% Gamma Adjusted KM-UCL (use when n<50)	0.52
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Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0597
Maximum	1.8	Median	0.01
SD	0.182	CV	3.044
k hat (MLE)	0.47	k star (bias corrected MLE)	0.468
Theta hat (MLE)	0.127	Theta star (bias corrected MLE)	0.127
nu hat (MLE)	340.5	nu star (bias corrected)	339
MLE Mean (bias corrected)	0.0597	MLE Sd (bias corrected)	0.0872
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (338.96, α)	297.3	Adjusted Chi Square Value (338.96, β)	297.1
95% Gamma Approximate UCL (use when n>=50)	0.068	95% Gamma Adjusted UCL (use when n<50)	N/A

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.835	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.159	Mean in Log Scale	-2.257
SD in Original Scale	0.18	SD in Log Scale	0.904
95% t UCL (assumes normality of ROS data)	0.174	95% Percentile Bootstrap UCL	0.174
95% BCA Bootstrap UCL	0.176	95% Bootstrap t UCL	0.177
95% H-UCL (Log ROS)	0.174		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-0.676	95% H-UCL (KM -Log)	N/A
KM SD (logged)	0.0969	95% Critical H Value (KM-Log)	N/A
KM Standard Error of Mean (logged)	0.0103		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.477	Mean in Log Scale	-0.759
SD in Original Scale	0.111	SD in Log Scale	0.196
95% t UCL (Assumes normality)	0.487	95% H-Stat UCL	0.485

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.524	95% KM (Percentile Bootstrap) UCL	N/A
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Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (semivolatile organics (ug/l)***3-methylphenol & 4-methylphenol (m&p-cresol)***meph3_4***ug/l****t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	27
Number of Detects	11	Number of Non-Detects	351
Number of Distinct Detects	11	Number of Distinct Non-Detects	17
Minimum Detect	1.1	Minimum Non-Detect	0.5
Maximum Detect	56.6	Maximum Non-Detect	1.1
Variance Detects	251.7	Percent Non-Detects	96.96%
Mean Detects	11.48	SD Detects	15.87
Median Detects	5.7	CV Detects	1.382
Skewness Detects	2.705	Kurtosis Detects	7.927
Mean of Logged Detects	1.834	SD of Logged Detects	1.129

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.636	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.28	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.834	Standard Error of Mean	0.179
SD	3.241	95% KM (BCA) UCL	1.178

95% KM (t) UCL	1.128	95% KM (Percentile Bootstrap) UCL	1.152
95% KM (z) UCL	1.128	95% KM Bootstrap t UCL	1.625
90% KM Chebyshev UCL	1.37	95% KM Chebyshev UCL	1.613
97.5% KM Chebyshev UCL	1.95	99% KM Chebyshev UCL	2.612
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.444	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.211	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.263	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.957	k star (bias corrected MLE)	0.756
Theta hat (MLE)	12	Theta star (bias corrected MLE)	15.18
nu hat (MLE)	21.05	nu star (bias corrected)	16.64
MLE Mean (bias corrected)	11.48	MLE Sd (bias corrected)	13.2
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0662	nu hat (KM)	47.9
Approximate Chi Square Value (47.90, α)	33.01	Adjusted Chi Square Value (47.90, β)	32.96
95% Gamma Approximate KM-UCL (use when n \geq 50)	1.21	95% Gamma Adjusted KM-UCL (use when n<50)	1.211
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.359
Maximum	56.6	Median	0.01
SD	3.296	CV	9.19
k hat (MLE)	0.215	k star (bias corrected MLE)	0.215
Theta hat (MLE)	1.668	Theta star (bias corrected MLE)	1.667
nu hat (MLE)	155.7	nu star (bias corrected)	155.7
MLE Mean (bias corrected)	0.359	MLE Sd (bias corrected)	0.773
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (155.72, α)	127.9	Adjusted Chi Square Value (155.72, β)	127.8
95% Gamma Approximate UCL (use when n \geq 50)	0.437	95% Gamma Adjusted UCL (use when n<50)	0.437
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.976	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.14	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.378	Mean in Log Scale	-6.909
SD in Original Scale	3.295	SD in Log Scale	3.654
95% t UCL (assumes normality of ROS data)	0.663	95% Percentile Bootstrap UCL	0.696
95% BCA Bootstrap UCL	0.908	95% Bootstrap t UCL	1.184
95% H-UCL (Log ROS)	2.098		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.616	95% H-UCL (KM -Log)	0.631
KM SD (logged)	0.473	95% Critical H Value (KM-Log)	1.781
KM Standard Error of Mean (logged)	0.0261		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.804	Mean in Log Scale	-0.689
SD in Original Scale	3.249	SD in Log Scale	0.512
95% t UCL (Assumes normality)	1.086	95% H-Stat UCL	0.601
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.128	95% GROS Approximate Gamma UCL	0.437
95% Approximate Gamma KM-UCL	1.21		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (semivolatile organics (ug/l)***acetophenone***98-86-2***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	24
Number of Detects	8	Number of Non-Detects	354
Number of Distinct Detects	7	Number of Distinct Non-Detects	17
Minimum Detect	0.091	Minimum Non-Detect	0.94
Maximum Detect	0.25	Maximum Non-Detect	1.9
Variance Detects	0.0027	Percent Non-Detects	97.79%
Mean Detects	0.13	SD Detects	0.0519
Median Detects	0.115	CV Detects	0.398
Skewness Detects	2.149	Kurtosis Detects	4.98
Mean of Logged Detects	-2.091	SD of Logged Detects	0.327
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.739	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.13	Standard Error of Mean	0.0184
SD	0.0486	95% KM (BCA) UCL	0.167
95% KM (t) UCL	0.161	95% KM (Percentile Bootstrap) UCL	0.163
95% KM (z) UCL	0.161	95% KM Bootstrap t UCL	0.22
90% KM Chebyshev UCL	0.185	95% KM Chebyshev UCL	0.21
97.5% KM Chebyshev UCL	0.245	99% KM Chebyshev UCL	0.313
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.676	Anderson-Darling GOF Test	
5% A-D Critical Value	0.715	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.249	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.294	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	9.549	k star (bias corrected MLE)	6.052
Theta hat (MLE)	0.0137	Theta star (bias corrected MLE)	0.0215
nu hat (MLE)	152.8	nu star (bias corrected)	96.83
MLE Mean (bias corrected)	0.13	MLE Sd (bias corrected)	0.053
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	7.201	nu hat (KM)	5213
Approximate Chi Square Value (N/A, α)	5047	Adjusted Chi Square Value (N/A, β)	5046
95% Gamma Approximate KM-UCL (use when n>=50)	0.135	95% Gamma Adjusted KM-UCL (use when n<50)	0.135
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0284	Mean	0.132
Maximum	0.289	Median	0.127
SD	0.0515	CV	0.391
k hat (MLE)	6.207	k star (bias corrected MLE)	6.158
Theta hat (MLE)	0.0212	Theta star (bias corrected MLE)	0.0214
nu hat (MLE)	4494	nu star (bias corrected)	4458
MLE Mean (bias corrected)	0.132	MLE Sd (bias corrected)	0.0531
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	4304	Adjusted Chi Square Value (N/A, β)	4303
95% Gamma Approximate UCL (use when n>=50)	0.137	95% Gamma Adjusted UCL (use when n<50)	0.137
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.843	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.227	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.131	Mean in Log Scale	-2.091
SD in Original Scale	0.0443	SD in Log Scale	0.333
95% t UCL (assumes normality of ROS data)	0.134	95% Percentile Bootstrap UCL	0.135
95% BCA Bootstrap UCL	0.135	95% Bootstrap t UCL	0.135
95% H-UCL (Log ROS)	0.135		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-2.091	95% H-UCL (KM -Log)	0.133
KM SD (logged)	0.306	95% Critical H Value (KM-Log)	1.714
KM Standard Error of Mean (logged)	0.116		

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.482 Mean in Log Scale	-0.746
SD in Original Scale	0.0625 SD in Log Scale	0.215
95% t UCL (Assumes normality)	0.487 95% H-Stat UCL	0.495
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	0.161 95% KM (Percentile Bootstrap) UCL	0.163

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (semivolatile organics (ug/l)***benzaldehyde***100-52-7***ug/l***t)

General Statistics		
Total Number of Observations	362 Number of Distinct Observations	38
Number of Detects	29 Number of Non-Detects	3.33E+02
Number of Distinct Detects	21 Number of Distinct Non-Detects	18
Minimum Detect	0.16 Minimum Non-Detect	0.94
Maximum Detect	1 Maximum Non-Detect	2.17
Variance Detects	0.0267 Percent Non-Detects	91.99%
Mean Detects	0.526 SD Detects	0.163
Median Detects	0.56 CV Detects	0.31
Skewness Detects	-0.228 Kurtosis Detects	2.799
Mean of Logged Detects	-0.706 SD of Logged Detects	0.402

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.847 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.229 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.511 Standard Error of Mean	0.026
SD	0.138 95% KM (BCA) UCL	0.551
95% KM (t) UCL	0.554 95% KM (Percentile Bootstrap) UCL	0.552
95% KM (z) UCL	0.554 95% KM Bootstrap t UCL	0.546
90% KM Chebyshev UCL	0.589 95% KM Chebyshev UCL	0.624
97.5% KM Chebyshev UCL	0.673 99% KM Chebyshev UCL	0.77

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.816 Anderson-Darling GOF Test	
5% A-D Critical Value	0.746 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.283 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.163 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	8.01 k star (bias corrected MLE)	7.204
Theta hat (MLE)	0.0657 Theta star (bias corrected MLE)	0.073
nu hat (MLE)	464.6 nu star (bias corrected)	417.9
MLE Mean (bias corrected)	0.526 MLE Sd (bias corrected)	0.196

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	13.69 nu hat (KM)	9912
Approximate Chi Square Value (N/A, α)	9682 Adjusted Chi Square Value (N/A, β)	9681
95% Gamma Approximate KM-UCL (use when n>=50)	0.523 95% Gamma Adjusted KM-UCL (use when n<50)	0.523

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.16 Mean	0.511
Maximum	1 Median	0.501
SD	0.117 CV	0.229
k hat (MLE)	18.48 k star (bias corrected MLE)	18.33
Theta hat (MLE)	0.0276 Theta star (bias corrected MLE)	0.0279
nu hat (MLE)	13380 nu star (bias corrected)	13270
MLE Mean (bias corrected)	0.511 MLE Sd (bias corrected)	0.119
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	13003 Adjusted Chi Square Value (N/A, β)	13002
95% Gamma Approximate UCL (use when n>=50)	0.521 95% Gamma Adjusted UCL (use when n<50)	0.521

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.745	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.306	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.5	Mean in Log Scale	-0.735
SD in Original Scale	0.144	SD in Log Scale	0.295
95% t UCL (assumes normality of ROS data)	0.512	95% Percentile Bootstrap UCL	0.513
95% BCA Bootstrap UCL	0.512	95% Bootstrap t UCL	0.513
95% H-UCL (Log ROS)	0.514		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.532	Mean in Log Scale	-0.662
SD in Original Scale	0.157	SD in Log Scale	0.236
95% t UCL (Assumes normality)	0.546	95% H-Stat UCL	0.542
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.554	95% KM (% Bootstrap) UCL	0.552
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (semivolatile organics (ug/l)***biphenyl (1,1'-biphenyl)***92-52-4***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	27
Number of Detects	12	Number of Non-Detects	350
Number of Distinct Detects	11	Number of Distinct Non-Detects	17
Minimum Detect	0.00242	Minimum Non-Detect	1.00%
Maximum Detect	0.041	Maximum Non-Detect	1.9
Variance Detects	1.97E-04	Percent Non-Detects	96.69%
Mean Detects	0.0116	SD Detects	0.014
Median Detects	0.00582	CV Detects	1.206
Skewness Detects	1.859	Kurtosis Detects	2.131
Mean of Logged Detects	-4.951	SD of Logged Detects	0.967
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.641	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.859	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.36	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.256	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00755	Standard Error of Mean	0.00192
SD	0.00947	95% KM (BCA) UCL	0.0108
95% KM (t) UCL	0.0107	95% KM (Percentile Bootstrap) UCL	0.0109
95% KM (z) UCL	0.0107	95% KM Bootstrap t UCL	0.0151
90% KM Chebyshev UCL	0.0133	95% KM Chebyshev UCL	0.0159
97.5% KM Chebyshev UCL	0.0196	99% KM Chebyshev UCL	0.0267
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.017	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.243	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.252	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.145	k star (bias corrected MLE)	0.914
Theta hat (MLE)	0.0102	Theta star (bias corrected MLE)	0.0127
nu hat (MLE)	27.47	nu star (bias corrected)	21.94
MLE Mean (bias corrected)	0.0116	MLE Sd (bias corrected)	0.0122
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.635	nu hat (KM)	460
Approximate Chi Square Value (460.04, α)	411.3	Adjusted Chi Square Value (460.04, β)	411.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.00844	95% Gamma Adjusted KM-UCL (use when n<50)	0.00844

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00242	Mean 0.0125
Maximum	0.0436	Median 0.01
SD	0.00614	CV 0.491
k hat (MLE)	6.436	k star (bias corrected MLE) 6.385
Theta hat (MLE)	0.00194	Theta star (bias corrected MLE) 0.00196
nu hat (MLE)	4660	nu star (bias corrected) 4623
MLE Mean (bias corrected)	0.0125	MLE Sd (bias corrected) 0.00495
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	4466	Adjusted Chi Square Value (N/A, β) 4465
95% Gamma Approximate UCL (use when n>=50)	0.0129	95% Gamma Adjusted UCL (use when n<50) 0.0129
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.87	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.859	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.168	Lilliefors GOF Test
5% Lilliefors Critical Value	0.256	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00715	Mean in Log Scale -5.262
SD in Original Scale	0.00644	SD in Log Scale 0.801
95% t UCL (assumes normality of ROS data)	0.0077	95% Percentile Bootstrap UCL 0.00775
95% BCA Bootstrap UCL	0.00776	95% Bootstrap t UCL 0.00771
95% H-UCL (Log ROS)	0.00777	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-5.257	95% H-UCL (KM -Log) 0.00733
KM SD (logged)	0.731	95% Critical H Value (KM-Log) 1.928
KM Standard Error of Mean (logged)	0.181	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.449	Mean in Log Scale -1.074
SD in Original Scale	0.134	SD in Log Scale 1.212
95% t UCL (Assumes normality)	0.461	95% H-Stat UCL 0.826
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.0107	95% GROS Approximate Gamma UCL 0.0129
95% Approximate Gamma KM-UCL	0.00844	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (semivolatile organics (ug/l)***bis(2-ethylhexyl)phthalate***117-81-7***ug/l***t)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 54
Number of Detects	56	Number of Non-Detects 306
Number of Distinct Detects	45	Number of Distinct Non-Detects 12
Minimum Detect	0.091	Minimum Non-Detect 0.51
Maximum Detect	63	Maximum Non-Detect 3.8
Variance Detects	75.71	Percent Non-Detects 84.53%
Mean Detects	3.415	SD Detects 8.701
Median Detects	1.4	CV Detects 2.548
Skewness Detects	6.194	Kurtosis Detects 41.77
Mean of Logged Detects	0.234	SD of Logged Detects 1.366
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.348	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.351	Lilliefors GOF Test
5% Lilliefors Critical Value	0.118	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1.115	Standard Error of Mean 0.204
SD	3.565	95% KM (BCA) UCL 1.48
95% KM (t) UCL	1.451	95% KM (Percentile Bootstrap) UCL 1.479
95% KM (z) UCL	1.45	95% KM Bootstrap t UCL 1.751

90% KM Chebyshev UCL	1.726	95% KM Chebyshev UCL	2.003
97.5% KM Chebyshev UCL	2.387	99% KM Chebyshev UCL	3.141

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.901	Anderson-Darling GOF Test	
5% A-D Critical Value	0.805	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.128	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.125	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.618	k star (bias corrected MLE)	0.597
Theta hat (MLE)	5.522	Theta star (bias corrected MLE)	5.718
nu hat (MLE)	69.27	nu star (bias corrected)	66.89
MLE Mean (bias corrected)	3.415	MLE Sd (bias corrected)	4.419

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0978	nu hat (KM)	70.82
Approximate Chi Square Value (70.82, α)	52.44	Adjusted Chi Square Value (70.82, β)	52.38
95% Gamma Approximate KM-UCL (use when n>=50)	1.506	95% Gamma Adjusted KM-UCL (use when n<50)	1.508
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.013
Maximum	63	Median	0.01
SD	3.712	CV	3.666
k hat (MLE)	0.262	k star (bias corrected MLE)	0.262
Theta hat (MLE)	3.86	Theta star (bias corrected MLE)	3.865
nu hat (MLE)	189.9	nu star (bias corrected)	189.7
MLE Mean (bias corrected)	1.013	MLE Sd (bias corrected)	1.978
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (189.68, α)	158.8	Adjusted Chi Square Value (189.68, β)	158.7
95% Gamma Approximate UCL (use when n>=50)	1.209	95% Gamma Adjusted UCL (use when n<50)	1.21

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.128	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.117	Mean in Log Scale	-0.605
SD in Original Scale	3.581	SD in Log Scale	1.08
95% t UCL (assumes normality of ROS data)	1.427	95% Percentile Bootstrap UCL	1.475
95% BCA Bootstrap UCL	1.704	95% Bootstrap t UCL	1.985
95% H-UCL (Log ROS)	1.109		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-0.582	95% H-UCL (KM -Log)	1.102
KM SD (logged)	1.057	95% Critical H Value (KM-Log)	2.173
KM Standard Error of Mean (logged)	0.146		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.341	Mean in Log Scale	-0.00862
SD in Original Scale	3.51E+00	SD in Log Scale	57.10%
95% t UCL (Assumes normality)	1.645	95% H-Stat UCL	1.233
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	1.48
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (semivolatile organics (ug/l)***butylbenzyl phthalate***85-68-7***ug/l***t)

General Statistics

Total Number of Observations	362	Number of Distinct Observations	59
Number of Detects	107	Number of Non-Detects	255
Number of Distinct Detects	41	Number of Distinct Non-Detects	18
Minimum Detect	0.134	Minimum Non-Detect	0.5

Maximum Detect	1.5	Maximum Non-Detect	1.9
Variance Detects	0.0424	Percent Non-Detects	70.44%
Mean Detects	0.266	SD Detects	0.206
Median Detects	0.182	CV Detects	0.774
Skewness Detects	3.04	Kurtosis Detects	12.28
Mean of Logged Detects	-1.494	SD of Logged Detects	0.522
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.636	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.289	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0857	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.251	Standard Error of Mean	0.0149
SD	0.171	95% KM (BCA) UCL	0.277
95% KM (t) UCL	0.275	95% KM (Percentile Bootstrap) UCL	0.276
95% KM (z) UCL	0.275	95% KM Bootstrap t UCL	0.278
90% KM Chebyshev UCL	0.295	95% KM Chebyshev UCL	0.316
97.5% KM Chebyshev UCL	0.344	99% KM Chebyshev UCL	0.399
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	9.238	Anderson-Darling GOF Test	
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.243	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	8.82E-02	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.083	k star (bias corrected MLE)	3.003
Theta hat (MLE)	0.0864	Theta star (bias corrected MLE)	0.0887
nu hat (MLE)	659.8	nu star (bias corrected)	642.6
MLE Mean (bias corrected)	0.266	MLE Sd (bias corrected)	0.154
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.146	nu hat (KM)	1554
Approximate Chi Square Value (N/A, α)	1463	Adjusted Chi Square Value (N/A, β)	1463
95% Gamma Approximate KM-UCL (use when n>=50)	0.266	95% Gamma Adjusted KM-UCL (use when n<50)	0.266
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.252
Maximum	1.5	Median	0.204
SD	0.169	CV	0.672
k hat (MLE)	2.437	k star (bias corrected MLE)	2.418
Theta hat (MLE)	0.103	Theta star (bias corrected MLE)	0.104
nu hat (MLE)	1764	nu star (bias corrected)	1751
MLE Mean (bias corrected)	0.252	MLE Sd (bias corrected)	0.162
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1655	Adjusted Chi Square Value (N/A, β)	1654
95% Gamma Approximate UCL (use when n>=50)	0.266	95% Gamma Adjusted UCL (use when n<50)	0.266
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.201	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0857	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.245	Mean in Log Scale	-1.516
SD in Original Scale	0.14	SD in Log Scale	0.446
95% t UCL (assumes normality of ROS data)	0.257	95% Percentile Bootstrap UCL	0.257
95% BCA Bootstrap UCL	0.258	95% Bootstrap t UCL	0.259
95% H-UCL (Log ROS)	0.253		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.411	Mean in Log Scale	-0.98
SD in Original Scale	0.156	SD in Log Scale	0.46
95% t UCL (Assumes normality)	0.425	95% H-Stat UCL	0.436
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.275	95% KM (% Bootstrap) UCL	27.60%

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (semivolatile organics (ug/l)***dibenzo(a,h)anthracene***53-70-3***ug/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	24
Number of Detects	19	Number of Non-Detects	#####
Number of Distinct Detects	18	Number of Distinct Non-Detects	6
Minimum Detect	0.016	Minimum Non-Detect	0.19
Maximum Detect	1.7	Maximum Non-Detect	0.38
Variance Detects	0.174	Percent Non-Detects	94.33%
Mean Detects	0.231	SD Detects	0.417
Median Detects	0.075	CV Detects	1.81
Skewness Detects	2.945	Kurtosis Detects	8.99
Mean of Logged Detects	-2.359	SD of Logged Detects	1.226
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.539	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.385	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.203	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0742	Standard Error of Mean	0.0104
SD	0.109	95% KM (BCA) UCL	0.0937
95% KM (t) UCL	0.0913	95% KM (Percentile Bootstrap) UCL	0.0914
95% KM (z) UCL	0.0913	95% KM Bootstrap t UCL	0.0949
90% KM Chebyshev UCL	0.105	95% KM Chebyshev UCL	0.119
97.5% KM Chebyshev UCL	0.139	99% KM Chebyshev UCL	0.178
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.678	Anderson-Darling GOF Test	
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.293	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.207	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.68	k star (bias corrected MLE)	0.608
Theta hat (MLE)	0.339	Theta star (bias corrected MLE)	0.379
nu hat (MLE)	25.85	nu star (bias corrected)	23.1
MLE Mean (bias corrected)	0.231	MLE Sd (bias corrected)	0.296
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.465	nu hat (KM)	311.3
Approximate Chi Square Value (311.34, α)	271.5	Adjusted Chi Square Value (311.34, β)	271.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.0851	95% Gamma Adjusted KM-UCL (use when n<50)	0.0852
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0978
Maximum	1.7	Median	0.0268
SD	0.159	CV	1.621
k hat (MLE)	0.64	k star (bias corrected MLE)	0.636
Theta hat (MLE)	0.153	Theta star (bias corrected MLE)	0.154
nu hat (MLE)	428.8	nu star (bias corrected)	426.3
MLE Mean (bias corrected)	0.0978	MLE Sd (bias corrected)	0.123
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (426.27, α)	379.4	Adjusted Chi Square Value (426.27, β)	379.2
95% Gamma Approximate UCL (use when n>=50)	0.11	95% Gamma Adjusted UCL (use when n<50)	0.11
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.915	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.188	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.203	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0889	Mean in Log Scale	-2.825
SD in Original Scale	0.123	SD in Log Scale	0.869
95% t UCL (assumes normality of ROS data)	0.0999	95% Percentile Bootstrap UCL	0.1

95% BCA Bootstrap UCL	0.103	95% Bootstrap t UCL	0.106
95% H-UCL (Log ROS)	0.0952		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-2.86	95% H-UCL (KM -Log)	0.0757
KM SD (logged)	0.652	95% Critical H Value (KM-Log)	1.876
KM Standard Error of Mean (logged)	0.156		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.105	Mean in Log Scale	-2.333
SD in Original Scale	0.102	SD in Log Scale	0.289
95% t UCL (Assumes normality)	0.114	95% H-Stat UCL	0.104
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0937		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (semivolatile organics (ug/l)***diethyl phthalate***84-66-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	5100.00%
Number of Detects	58	Number of Non-Detects	304
Number of Distinct Detects	35	Number of Distinct Non-Detects	18
Minimum Detect	0.037	Minimum Non-Detect	0.5
Maximum Detect	1.7	Maximum Non-Detect	1.9
Variance Detects	0.165	Percent Non-Detects	83.98%
Mean Detects	0.372	SD Detects	0.406
Median Detects	0.195	CV Detects	1.092
Skewness Detects	2.069	Kurtosis Detects	3.552
Mean of Logged Detects	-1.406	SD of Logged Detects	0.88
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.681	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	6.66E-16	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.297	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.116	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.256	Standard Error of Mean	0.0227
SD	0.227	95% KM (BCA) UCL	0.293
95% KM (t) UCL	0.293	95% KM (Percentile Bootstrap) UCL	0.293
95% KM (z) UCL	0.293	95% KM Bootstrap t UCL	0.3
90% KM Chebyshev UCL	0.324	95% KM Chebyshev UCL	0.355
97.5% KM Chebyshev UCL	0.398	99% KM Chebyshev UCL	0.482
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.205	Anderson-Darling GOF Test	
5% A-D Critical Value	0.772	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.225	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.119	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.339	k star (bias corrected MLE)	1.282
Theta hat (MLE)	0.278	Theta star (bias corrected MLE)	0.29
nu hat (MLE)	155.4	nu star (bias corrected)	148.7
MLE Mean (bias corrected)	0.372	MLE Sd (bias corrected)	0.329
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.27	nu hat (KM)	919.4
Approximate Chi Square Value (919.38, α)	850	Adjusted Chi Square Value (919.38, β)	849.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.277	95% Gamma Adjusted KM-UCL (use when n<50)	0.277
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.262
Maximum	1.7	Median	0.189

SD	0.255	CV	0.973
k hat (MLE)	1.076	k star (bias corrected MLE)	1.069
Theta hat (MLE)	0.244	Theta star (bias corrected MLE)	0.245
nu hat (MLE)	778.8	nu star (bias corrected)	773.7
MLE Mean (bias corrected)	0.262	MLE Sd (bias corrected)	0.253
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (773.67, α)	710.1	Adjusted Chi Square Value (773.67, β)	709.9
95% Gamma Approximate UCL (use when n>=50)	0.285	95% Gamma Adjusted UCL (use when n<50)	0.286
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.165	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.116	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.258	Mean in Log Scale	-1.602
SD in Original Scale	0.219	SD in Log Scale	0.686
95% t UCL (assumes normality of ROS data)	0.277	95% Percentile Bootstrap UCL	0.277
95% BCA Bootstrap UCL	0.279	95% Bootstrap t UCL	0.28
95% H-UCL (Log ROS)	0.273		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.457	Mean in Log Scale	-0.864
SD in Original Scale	0.176	SD in Log Scale	0.447
95% t UCL (Assumes normality)	0.472	95% H-Stat UCL	0.486
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.293	95% KM (% Bootstrap) UCL	0.293
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (semivolatile organics (ug/l)***di-n-butyl phthalate***84-74-2***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	2500.00%
Number of Detects	10	Number of Non-Detects	352
Number of Distinct Detects	7	Number of Distinct Non-Detects	18
Minimum Detect	0.12	Minimum Non-Detect	0.5
Maximum Detect	0.3	Maximum Non-Detect	1.9
Variance Detects	0.00492	Percent Non-Detects	97.24%
Mean Detects	0.185	SD Detects	0.0701
Median Detects	0.16	CV Detects	0.379
Skewness Detects	0.648	Kurtosis Detects	-1.293
Mean of Logged Detects	-1.749	SD of Logged Detects	0.367
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.838	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.185	Standard Error of Mean	0.0222
SD	0.0665	95% KM (BCA) UCL	0.223
95% KM (t) UCL	0.222	95% KM (Percentile Bootstrap) UCL	0.225
95% KM (z) UCL	0.221	95% KM Bootstrap t UCL	0.242
90% KM Chebyshev UCL	0.252	95% KM Chebyshev UCL	0.282
97.5% KM Chebyshev UCL	0.323	99% KM Chebyshev UCL	0.406
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.739	Anderson-Darling GOF Test	
5% A-D Critical Value	0.727	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.298	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.267	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	8.22	k star (bias corrected MLE)	5.821
Theta hat (MLE)	0.0225	Theta star (bias corrected MLE)	0.0318
nu hat (MLE)	164.4	nu star (bias corrected)	116.4
MLE Mean (bias corrected)	0.185	MLE Sd (bias corrected)	0.0767

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	7.734	nu hat (KM)	5600
Approximate Chi Square Value (N/A, α)	5427	Adjusted Chi Square Value (N/A, β)	5426
95% Gamma Approximate KM-UCL (use when n>=50)	0.191	95% Gamma Adjusted KM-UCL (use when n<50)	0.191

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.0429	Mean	0.187
Maximum	0.413	Median	0.179
SD	0.073	CV	0.391
k hat (MLE)	6.26	k star (bias corrected MLE)	6.21
Theta hat (MLE)	0.0298	Theta star (bias corrected MLE)	0.0301
nu hat (MLE)	4532	nu star (bias corrected)	4496
MLE Mean (bias corrected)	0.187	MLE Sd (bias corrected)	0.0749
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	4341	Adjusted Chi Square Value (N/A, β)	4341
95% Gamma Approximate UCL (use when n>=50)	0.193	95% Gamma Adjusted UCL (use when n<50)	0.193

Lognormal GOF Test on Detected Observations Only
Shapiro Wilk Test Statistic 0.846 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value 0.842 Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic 0.286 Lilliefors GOF Test
5% Lilliefors Critical Value 0.28 Detected Data Not Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.186	Mean in Log Scale	-1.749
SD in Original Scale	0.071	SD in Log Scale	0.374
95% t UCL (assumes normality of ROS data)	0.193	95% Percentile Bootstrap UCL	0.193
95% BCA Bootstrap UCL	0.193	95% Bootstrap t UCL	0.193
95% H-UCL (Log ROS)	0.193		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.749	95% H-UCL (KM -Log)	0.191
KM SD (logged)	0.348	95% Critical H Value (KM-Log)	1.729
KM Standard Error of Mean (logged)	0.116		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.462	Mean in Log Scale	-0.795
SD in Original Scale	0.0824	SD in Log Scale	0.242
95% t UCL (Assumes normality)	0.469	95% H-Stat UCL	0.475
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.222	95% KM (% Bootstrap) UCL	22.50%

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (semivolatile organics (ug/l)***di-n-octyl phthalate***117-84-0***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	2200.00%
Number of Detects	5	Number of Non-Detects	357
Number of Distinct Detects	5	Number of Distinct Non-Detects	17
Minimum Detect	0.083	Minimum Non-Detect	0.94
Maximum Detect	2.2	Maximum Non-Detect	1.9
Variance Detects	0.592	Percent Non-Detects	98.62%
Mean Detects	0.959	SD Detects	0.77
Median Detects	0.794	CV Detects	0.803
Skewness Detects	1.12E+00	Kurtosis Detects	2.557
Mean of Logged Detects	-0.449	SD of Logged Detects	1.218

Normal GOF Test on Detects Only
Shapiro Wilk Test Statistic 0.885 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value 0.762 Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic 0.308 Lilliefors GOF Test
5% Lilliefors Critical Value 0.396 Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.562	Standard Error of Mean 0.209
SD	0.342	95% KM (BCA) UCL 0.94
95% KM (t) UCL	0.907	95% KM (Percentile Bootstrap) UCL 0.94
95% KM (z) UCL	0.906	95% KM Bootstrap t UCL 3.743
90% KM Chebyshev UCL	1.19	95% KM Chebyshev UCL 1.474
97.5% KM Chebyshev UCL	1.869	99% KM Chebyshev UCL 2.644
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.438	Anderson-Darling GOF Test
5% A-D Critical Value	0.688	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.32	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.362	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.371	k star (bias corrected MLE) 0.682
Theta hat (MLE)	0.7	Theta star (bias corrected MLE) 1.407
nu hat (MLE)	13.71	nu star (bias corrected) 6.817
MLE Mean (bias corrected)	0.959	MLE Sd (bias corrected) 1.162
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.693	nu hat (KM) 1950
Approximate Chi Square Value (N/A, α)	1848	Adjusted Chi Square Value (N/A, β) 1848
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.593	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.593
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.083	Mean 0.528
Maximum	2.2	Median 0.467
SD	0.241	CV 0.456
k hat (MLE)	5.791	k star (bias corrected MLE) 5.745
Theta hat (MLE)	0.0912	Theta star (bias corrected MLE) 0.092
nu hat (MLE)	4193	nu star (bias corrected) 4160
MLE Mean (bias corrected)	0.528	MLE Sd (bias corrected) 0.22
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	4011	Adjusted Chi Square Value (N/A, β) 4010
95% Gamma Approximate UCL (use when $n \geq 50$)	0.548	95% Gamma Adjusted UCL (use when $n < 50$) 0.548
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.836	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.363	Lilliefors GOF Test
5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.392	Mean in Log Scale -1.107
SD in Original Scale	0.246	SD in Log Scale 0.585
95% t UCL (assumes normality of ROS data)	0.413	95% Percentile Bootstrap UCL 0.413
95% BCA Bootstrap UCL	0.414	95% Bootstrap t UCL 0.416
95% H-UCL (Log ROS)	0.415	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-0.971	95% H-UCL (KM -Log) 0.749
KM SD (logged)	1.059	95% Critical H Value (KM-Log) 2.175
KM Standard Error of Mean (logged)	0.67	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.496	Mean in Log Scale -0.712
SD in Original Scale	0.103	SD in Log Scale 0.143
95% t UCL (Assumes normality)	0.505	95% H-Stat UCL 50.20%
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.907	95% KM (Percentile Bootstrap) UCL 0.94

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (semivolatile organics (ug/l)***phenol***108-95-2***ug/l***t)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	22
Number of Detects	8	Number of Non-Detects	354
Number of Distinct Detects	8	Number of Distinct Non-Detects	15
Minimum Detect	0.076	Minimum Non-Detect	0.19
Maximum Detect	0.7	Maximum Non-Detect	0.543
Variance Detects	0.0578	Percent Non-Detects	97.79%
Mean Detects	0.32	SD Detects	0.24
Median Detects	0.23	CV Detects	0.751
Skewness Detects	0.879	Kurtosis Detects	-0.829
Mean of Logged Detects	-1.402	SD of Logged Detects	0.797
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.86	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.256	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.123	Standard Error of Mean	0.0238
SD	0.0591	95% KM (BCA) UCL	0.178
95% KM (t) UCL	0.162	95% KM (Percentile Bootstrap) UCL	0.191
95% KM (z) UCL	0.162	95% KM Bootstrap t UCL	0.469
90% KM Chebyshev UCL	0.195	95% KM Chebyshev UCL	0.227
97.5% KM Chebyshev UCL	0.272	99% KM Chebyshev UCL	0.36
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.29	Anderson-Darling GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.186	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.297	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.048	k star (bias corrected MLE)	1.364
Theta hat (MLE)	0.156	Theta star (bias corrected MLE)	0.235
nu hat (MLE)	32.78	nu star (bias corrected)	21.82
MLE Mean (bias corrected)	0.32	MLE Sd (bias corrected)	0.274
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	4.348	nu hat (KM)	3148
Approximate Chi Square Value (N/A, α)	3019	Adjusted Chi Square Value (N/A, β)	3018
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.129	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.129
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.103
Maximum	0.7	Median	0.0804
SD	0.0911	CV	0.888
k hat (MLE)	1.284	k star (bias corrected MLE)	1.275
Theta hat (MLE)	0.0799	Theta star (bias corrected MLE)	0.0805
nu hat (MLE)	929.3	nu star (bias corrected)	922.9
MLE Mean (bias corrected)	0.103	MLE Sd (bias corrected)	0.0909
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (922.94, α)	853.4	Adjusted Chi Square Value (922.94, β)	853.2
95% Gamma Approximate UCL (use when $n \geq 50$)	0.111	95% Gamma Adjusted UCL (use when $n < 50$)	0.111
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.953	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.141	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.122	Mean in Log Scale	-2.235
SD in Original Scale	0.0718	SD in Log Scale	0.505
95% t UCL (assumes normality of ROS data)	0.128	95% Percentile Bootstrap UCL	0.128
95% BCA Bootstrap UCL	0.129	95% Bootstrap t UCL	0.129
95% H-UCL (Log ROS)	0.127		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-2.168	95% H-UCL (KM -Log)	0.126
KM SD (logged)	0.363	95% Critical H Value (KM-Log)	1.735
KM Standard Error of Mean (logged)	0.2		

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.114	Mean in Log Scale -2.239
SD in Original Scale	0.0627	SD in Log Scale 0.31
95% t UCL (Assumes normality)	0.12	95% H-Stat UCL 0.115
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	0.162	95% KM (Percentile Bootstrap) UCL 0.191

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (semivolatile organics (ug/l)***total cpah teq (epa 1993) (u = 1/2)****tscpahtef7ma_n***ug/l****t)

General Statistics		
Total Number of Observations	335	Number of Distinct Observations 47
Number of Detects	42	Number of Non-Detects 293
Number of Distinct Detects	42	Number of Distinct Non-Detects 5
Minimum Detect	0.046	Minimum Non-Detect 0.19
Maximum Detect	3.221	Maximum Non-Detect 0.23
Variance Detects	0.3	Percent Non-Detects 87.46%
Mean Detects	0.322	SD Detects 0.547
Median Detects	0.211	CV Detects 1.701
Skewness Detects	4.435	Kurtosis Detects 20.99
Mean of Logged Detects	-1.583	SD of Logged Detects 0.758

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.389	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.441	Lilliefors GOF Test
5% Lilliefors Critical Value	0.137	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.154	Standard Error of Mean 0.0143
SD	0.205	95% KM (BCA) UCL 0.18
95% KM (t) UCL	0.177	95% KM (Percentile Bootstrap) UCL 0.18
95% KM (z) UCL	0.177	95% KM Bootstrap t UCL 0.185
90% KM Chebyshev UCL	0.197	95% KM Chebyshev UCL 0.216
97.5% KM Chebyshev UCL	0.243	99% KM Chebyshev UCL 0.296

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	6.048	Anderson-Darling GOF Test
5% A-D Critical Value	0.772	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.388	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.14	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.253	k star (bias corrected MLE) 1.18
Theta hat (MLE)	0.257	Theta star (bias corrected MLE) 0.273
nu hat (MLE)	105.3	nu star (bias corrected) 99.08
MLE Mean (bias corrected)	0.322	MLE Sd (bias corrected) 0.296

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.561	nu hat (KM) 375.9
Approximate Chi Square Value (375.93, α)	332	Adjusted Chi Square Value (375.93, β) 331.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.174	95% Gamma Adjusted KM-UCL (use when n<50) 0.174

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.091
Maximum	3.221	Median 0.01
SD	0.225	CV 2.47
k hat (MLE)	0.584	k star (bias corrected MLE) 0.581
Theta hat (MLE)	0.156	Theta star (bias corrected MLE) 0.157
nu hat (MLE)	391.4	nu star (bias corrected) 389.2
MLE Mean (bias corrected)	0.091	MLE Sd (bias corrected) 0.119
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (389.25, α)	344.5	Adjusted Chi Square Value (389.25, β) 344.3

95% Gamma Approximate UCL (use when n>=50)	0.103	95% Gamma Adjusted UCL (use when n<50)	0.103
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.779	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.313	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.137	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.145	Mean in Log Scale	-2.133
SD in Original Scale	0.208	SD in Log Scale	0.532
95% t UCL (assumes normality of ROS data)	0.164	95% Percentile Bootstrap UCL	0.165
95% BCA Bootstrap UCL	0.175	95% Bootstrap t UCL	0.196
95% H-UCL (Log ROS)	0.144		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.125	Mean in Log Scale	-2.239
SD in Original Scale	0.206	SD in Log Scale	0.366
95% t UCL (Assumes normality)	0.144	95% H-Stat UCL	11.80%
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.177	95% KM (% Bootstrap) UCL	0.18
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (semivolatile organics (ug/l)***total cresol (o,m,p) (u = 1/2)***tcresol_n***ug/l***t)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	28
Number of Detects	11	Number of Non-Detects	351
Number of Distinct Detects	11	Number of Distinct Non-Detects	17
Minimum Detect	1.59	Minimum Non-Detect	0.5
Maximum Detect	56.85	Maximum Non-Detect	1.1
Variance Detects	250.3	Percent Non-Detects	96.96%
Mean Detects	11.99	SD Detects	15.82
Median Detects	6.19	CV Detects	1.319
Skewness Detects	2.681	Kurtosis Detects	7.792
Mean of Logged Detects	1.952	SD of Logged Detects	1.033
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.641	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.281	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.849	Standard Error of Mean	0.181
SD	3.287	95% KM (BCA) UCL	1.194
95% KM (t) UCL	1.148	95% KM (Percentile Bootstrap) UCL	1.176
95% KM (z) UCL	1.147	95% KM Bootstrap t UCL	1.589
90% KM Chebyshev UCL	1.393	95% KM Chebyshev UCL	1.639
97.5% KM Chebyshev UCL	1.981	99% KM Chebyshev UCL	2.652
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.497	Anderson-Darling GOF Test	
5% A-D Critical Value	0.75	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.222	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.262	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.075	k star (bias corrected MLE)	0.842
Theta hat (MLE)	11.16	Theta star (bias corrected MLE)	14.23
nu hat (MLE)	23.65	nu star (bias corrected)	18.53
MLE Mean (bias corrected)	11.99	MLE Sd (bias corrected)	13.07
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0667	nu hat (KM)	48.32
Approximate Chi Square Value (48.32, α)	33.36	Adjusted Chi Square Value (48.32, β)	33.31
95% Gamma Approximate KM-UCL (use when n>=50)	1.23	95% Gamma Adjusted KM-UCL (use when n<50)	1.232

Gamma (KM) may not be used when k hat (KM) is < 0.1

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.374
Maximum	56.85	Median	0.01
SD	3.343	CV	8.936
k hat (MLE)	0.213	k star (bias corrected MLE)	0.213
Theta hat (MLE)	1.757	Theta star (bias corrected MLE)	1.756
nu hat (MLE)	154.1	nu star (bias corrected)	154.2
MLE Mean (bias corrected)	0.374	MLE Sd (bias corrected)	0.811
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (154.20, α)	126.5	Adjusted Chi Square Value (154.20, β)	126.4
95% Gamma Approximate UCL (use when n>=50)	0.456	95% Gamma Adjusted UCL (use when n<50)	0.456

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.967	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.157	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.407	Mean in Log Scale	-6.119
SD in Original Scale	3.342	SD in Log Scale	3.372
95% t UCL (assumes normality of ROS data)	0.697	95% Percentile Bootstrap UCL	0.711
95% BCA Bootstrap UCL	0.897	95% Bootstrap t UCL	1.183
95% H-UCL (Log ROS)	1.503		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-0.613	95% H-UCL (KM -Log)	0.638
KM SD (logged)	0.485	95% Critical H Value (KM-Log)	1.787
KM Standard Error of Mean (logged)	0.0268		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.82	Mean in Log Scale	-0.685
SD in Original Scale	3.295	SD in Log Scale	52.40%
95% t UCL (Assumes normality)	1.105	95% H-Stat UCL	0.608

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	1.148	95% GROS Approximate Gamma UCL	0.456
95% Approximate Gamma KM-UCL	1.23		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (total petroleum hydrocarbons (mg/l)***diesel range organics (c10 - c28)***tphc10_28***mg/l****)

General Statistics

Total Number of Observations	335	Number of Distinct Observations	123
Number of Detects	255	Number of Non-Detects	80
Number of Distinct Detects	114	Number of Distinct Non-Detects	33
Minimum Detect	0.031	Minimum Non-Detect	0.026
Maximum Detect	0.284	Maximum Non-Detect	0.065
Variance Detects	0.00217	Percent Non-Detects	23.88%
Mean Detects	0.0892	SD Detects	0.0465
Median Detects	0.076	CV Detects	0.522
Skewness Detects	1.549	Kurtosis Detects	2.583
Mean of Logged Detects	-2.53	SD of Logged Detects	0.465

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.852	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.133	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0555	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.0753	Standard Error of Mean	0.00262
SD	0.0477	95% KM (BCA) UCL	0.08

95% KM (t) UCL	0.0796	95% KM (Percentile Bootstrap) UCL	0.0795
95% KM (z) UCL	0.0796	95% KM Bootstrap t UCL	0.08
90% KM Chebyshev UCL	0.0832	95% KM Chebyshev UCL	0.0867
97.5% KM Chebyshev UCL	0.0917	99% KM Chebyshev UCL	0.101

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.073	Anderson-Darling GOF Test	
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0866	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0575	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	4.565	k star (bias corrected MLE)	4.514
Theta hat (MLE)	0.0195	Theta star (bias corrected MLE)	0.0198
nu hat (MLE)	2328	nu star (bias corrected)	2302
MLE Mean (bias corrected)	0.0892	MLE Sd (bias corrected)	0.042

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.494	nu hat (KM)	1671
Approximate Chi Square Value (N/A, α)	1577	Adjusted Chi Square Value (N/A, β)	1576
95% Gamma Approximate KM-UCL (use when n>=50)	0.0798	95% Gamma Adjusted KM-UCL (use when n<50)	0.0798

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0723
Maximum	0.284	Median	0.061
SD	0.0508	CV	0.703
k hat (MLE)	1.936	k star (bias corrected MLE)	1.921
Theta hat (MLE)	0.0373	Theta star (bias corrected MLE)	0.0376
nu hat (MLE)	1297	nu star (bias corrected)	1287
MLE Mean (bias corrected)	0.0723	MLE Sd (bias corrected)	0.0522
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1205	Adjusted Chi Square Value (N/A, β)	1204
95% Gamma Approximate UCL (use when n>=50)	0.0772	95% Gamma Adjusted UCL (use when n<50)	0.0773

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0735	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0555	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0754	Mean in Log Scale	-2.759
SD in Original Scale	0.0476	SD in Log Scale	0.586
95% t UCL (assumes normality of ROS data)	0.0797	95% Percentile Bootstrap UCL	0.0798
95% BCA Bootstrap UCL	0.0804	95% Bootstrap t UCL	0.0802
95% H-UCL (Log ROS)	0.0798		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.073	Mean in Log Scale	-2.851
SD in Original Scale	0.0499	SD in Log Scale	0.711
95% t UCL (Assumes normality)	0.0775	95% H-Stat UCL	0.0802
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	0.08		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (total petroleum hydrocarbons (mg/l)***total petroleum hydrocarbons (c9-c40)***tphc9_40***mg/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	173
Number of Detects	284	Number of Non-Detects	51
Number of Distinct Detects	165	Number of Distinct Non-Detects	29
Minimum Detect	0.013	Minimum Non-Detect	0.033
Maximum Detect	0.474	Maximum Non-Detect	0.08
Variance Detects	0.0055	Percent Non-Detects	15.22%
Mean Detects	0.125	SD Detects	0.0742
Median Detects	0.104	CV Detects	0.594

Skewness Detects	1.508	Kurtosis Detects	2.961
Mean of Logged Detects	-2.243	SD of Logged Detects	0.583
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.879	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.124	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0526	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.111	Standard Error of Mean	0.00417
SD	0.0759	95% KM (BCA) UCL	0.118
95% KM (t) UCL	0.118	95% KM (Percentile Bootstrap) UCL	0.118
95% KM (z) UCL	0.118	95% KM Bootstrap t UCL	0.118
90% KM Chebyshev UCL	0.123	95% KM Chebyshev UCL	0.129
97.5% KM Chebyshev UCL	0.137	99% KM Chebyshev UCL	0.152
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.357	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.073	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0543	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.24	k star (bias corrected MLE)	3.208
Theta hat (MLE)	0.0385	Theta star (bias corrected MLE)	0.0389
nu hat (MLE)	1840	nu star (bias corrected)	1822
MLE Mean (bias corrected)	0.125	MLE Sd (bias corrected)	0.0697
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.137	nu hat (KM)	1432
Approximate Chi Square Value (N/A, α)	1345	Adjusted Chi Square Value (N/A, β)	1345
95% Gamma Approximate KM-UCL (use when n>=50)	0.118	95% Gamma Adjusted KM-UCL (use when n<50)	0.118
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.109
Maximum	0.474	Median	0.091
SD	0.0774	CV	0.707
k hat (MLE)	1.963	k star (bias corrected MLE)	1.947
Theta hat (MLE)	0.0558	Theta star (bias corrected MLE)	0.0562
nu hat (MLE)	1315	nu star (bias corrected)	1305
MLE Mean (bias corrected)	0.109	MLE Sd (bias corrected)	0.0785
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1222	Adjusted Chi Square Value (N/A, β)	1222
95% Gamma Approximate UCL (use when n>=50)	0.117	95% Gamma Adjusted UCL (use when n<50)	0.117
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0451	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0526	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.112	Mean in Log Scale	-2.401
SD in Original Scale	0.0751	SD in Log Scale	0.659
95% t UCL (assumes normality of ROS data)	0.118	95% Percentile Bootstrap UCL	0.119
95% BCA Bootstrap UCL	0.119	95% Bootstrap t UCL	0.119
95% H-UCL (Log ROS)	0.12		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-2.433	95% H-UCL (KM -Log)	0.123
KM SD (logged)	0.721	95% Critical H Value (KM-Log)	1.919
KM Standard Error of Mean (logged)	0.0421		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.11	Mean in Log Scale	-2.461
SD in Original Scale	0.077	SD in Log Scale	75.10%
95% t UCL (Assumes normality)	0.117	95% H-Stat UCL	0.123
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			

95% KM (BCA) UCL		0.118	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (volatile organics (ug/l)***1,2-dichloroethene, cis-***156-59-2***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	43
Number of Detects	84	Number of Non-Detects	251
Number of Distinct Detects	42	Number of Distinct Non-Detects	1
Minimum Detect	0.19	Minimum Non-Detect	0.5
Maximum Detect	3.8	Maximum Non-Detect	0.5
Variance Detects	0.229	Percent Non-Detects	74.93%
Mean Detects	0.431	SD Detects	0.479
Median Detects	0.315	CV Detects	1.111
Skewness Detects	5.485	Kurtosis Detects	34.25
Mean of Logged Detects	-1.055	SD of Logged Detects	0.542
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.443	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.308	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0967	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.333	Standard Error of Mean	0.017
SD	0.257	95% KM (BCA) UCL	0.362
95% KM (t) UCL	0.361	95% KM (Percentile Bootstrap) UCL	0.361
95% KM (z) UCL	0.361	95% KM Bootstrap t UCL	0.369
90% KM Chebyshev UCL	0.384	95% KM Chebyshev UCL	0.407
97.5% KM Chebyshev UCL	0.439	99% KM Chebyshev UCL	0.502
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.037	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.179	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0985	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.51	k star (bias corrected MLE)	2.428
Theta hat (MLE)	0.172	Theta star (bias corrected MLE)	0.177
nu hat (MLE)	421.7	nu star (bias corrected)	407.9
MLE Mean (bias corrected)	0.431	MLE Sd (bias corrected)	0.276
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.676	nu hat (KM)	1123
Approximate Chi Square Value (N/A, α)	1046	Adjusted Chi Square Value (N/A, β)	1046
95% Gamma Approximate KM-UCL (use when n>=50)	0.358	95% Gamma Adjusted KM-UCL (use when n<50)	0.358
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.332
Maximum	3.8	Median	0.285
SD	0.298	CV	0.898
k hat (MLE)	1.784	k star (bias corrected MLE)	1.77
Theta hat (MLE)	0.186	Theta star (bias corrected MLE)	0.187
nu hat (MLE)	1195	nu star (bias corrected)	1186
MLE Mean (bias corrected)	0.332	MLE Sd (bias corrected)	0.249
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1107	Adjusted Chi Square Value (N/A, β)	1107
95% Gamma Approximate UCL (use when n>=50)	0.355	95% Gamma Adjusted UCL (use when n<50)	0.355
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.132	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0967	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.342	Mean in Log Scale	-1.187
SD in Original Scale	0.263	SD in Log Scale	0.432
95% t UCL (assumes normality of ROS data)	0.366	95% Percentile Bootstrap UCL	0.368
95% BCA Bootstrap UCL	0.373	95% Bootstrap t UCL	0.383

95% H-UCL (Log ROS)	0.349	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.295	Mean in Log Scale -1.303
SD in Original Scale	0.251	SD in Log Scale 0.306
95% t UCL (Assumes normality)	0.318	95% H-Stat UCL 0.293
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	0.361	95% KM (% Bootstrap) UCL 0.361

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (volatile organics (ug/l)***acetone***67-64-1***ug/l***t)

General Statistics		
Total Number of Observations	335	Number of Distinct Observations 46
Number of Detects	130	Number of Non-Detects 205
Number of Distinct Detects	45	Number of Distinct Non-Detects 1
Minimum Detect	1.4	Minimum Non-Detect 5
Maximum Detect	10	Maximum Non-Detect 5
Variance Detects	2.958	Percent Non-Detects 61.19%
Mean Detects	3.108	SD Detects 1.72
Median Detects	2.6	CV Detects 0.553
Skewness Detects	2.052	Kurtosis Detects 4.839
Mean of Logged Detects	1.021	SD of Logged Detects 0.451

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.776	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.167	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0777	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2.832	Standard Error of Mean 0.098
SD	1.312	95% KM (BCA) UCL 2.996
95% KM (t) UCL	2.99E+00	95% KM (Percentile Bootstrap) UCL 2.996
95% KM (z) UCL	2.994	95% KM Bootstrap t UCL 3.001
90% KM Chebyshev UCL	3.126	95% KM Chebyshev UCL 3.26
97.5% KM Chebyshev UCL	3.444	99% KM Chebyshev UCL 3.808

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.497	Anderson-Darling GOF Test
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.121	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0819	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	4.585	k star (bias corrected MLE) 4.485
Theta hat (MLE)	0.678	Theta star (bias corrected MLE) 0.693
nu hat (MLE)	1192	nu star (bias corrected) 1166
MLE Mean (bias corrected)	3.108	MLE Sd (bias corrected) 1.468

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	4.659	nu hat (KM) 3121
Approximate Chi Square Value (N/A, α)	2992	Adjusted Chi Square Value (N/A, β) 2992
95% Gamma Approximate KM-UCL (use when n>=50)	2.954	95% Gamma Adjusted KM-UCL (use when n<50) 2.955

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.421	Mean 2.868
Maximum	10	Median 2.6
SD	1.428	CV 0.498
k hat (MLE)	4.582	k star (bias corrected MLE) 4.543
Theta hat (MLE)	0.626	Theta star (bias corrected MLE) 0.631
nu hat (MLE)	3070	nu star (bias corrected) 3044
MLE Mean (bias corrected)	2.868	MLE Sd (bias corrected) 1.345
		Adjusted Level of Significance (β) 0.0493

Approximate Chi Square Value (N/A, α)	2916	Adjusted Chi Square Value (N/A, β)	2916
95% Gamma Approximate UCL (use when $n \geq 50$)	2.993	95% Gamma Adjusted UCL (use when $n < 50$)	2.993
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.861	Mean in Log Scale	0.965
SD in Original Scale	1.322	SD in Log Scale	0.404
95% t UCL (assumes normality of ROS data)	2.98	95% Percentile Bootstrap UCL	2.978
95% BCA Bootstrap UCL	2.986	95% Bootstrap t UCL	2.994
95% H-UCL (Log ROS)	2.961		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.736	Mean in Log Scale	0.957
SD in Original Scale	1.109	SD in Log Scale	0.285
95% t UCL (Assumes normality)	2.836	95% H-Stat UCL	2.785
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	2.994	95% KM (% Bootstrap) UCL	2.996
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (volatile organics (ug/l)***benzene***71-43-2***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	37
Number of Detects	63	Number of Non-Detects	272
Number of Distinct Detects	36	Number of Distinct Non-Detects	1
Minimum Detect	0.16	Minimum Non-Detect	0.5
Maximum Detect	1	Maximum Non-Detect	0.5
Variance Detects	0.0339	Percent Non-Detects	81.19%
Mean Detects	0.383	SD Detects	0.184
Median Detects	0.33	CV Detects	0.48
Skewness Detects	1.388	Kurtosis Detects	1.498
Mean of Logged Detects	-1.054	SD of Logged Detects	0.427
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.854	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	3.30E-08	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.158	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.322	Standard Error of Mean	0.0122
SD	0.113	95% KM (BCA) UCL	0.342
95% KM (t) UCL	0.342	95% KM (Percentile Bootstrap) UCL	0.343
95% KM (z) UCL	0.342	95% KM Bootstrap t UCL	0.343
90% KM Chebyshev UCL	0.358	95% KM Chebyshev UCL	0.375
97.5% KM Chebyshev UCL	0.398	99% KM Chebyshev UCL	0.443
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.414	Anderson-Darling GOF Test	
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.132	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.112	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.39	k star (bias corrected MLE)	5.144
Theta hat (MLE)	0.0711	Theta star (bias corrected MLE)	0.0746
nu hat (MLE)	679.2	nu star (bias corrected)	648.2
MLE Mean (bias corrected)	0.383	MLE Sd (bias corrected)	0.169
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	8.052	nu hat (KM)	5395
Approximate Chi Square Value (N/A, α)	5225	Adjusted Chi Square Value (N/A, β)	5224
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.332	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.332

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0834 Mean	0.326
Maximum	1 Median	0.304
SD	0.132 CV	0.406
k hat (MLE)	6.497 k star (bias corrected MLE)	6.441
Theta hat (MLE)	0.0502 Theta star (bias corrected MLE)	0.0507
nu hat (MLE)	4353 nu star (bias corrected)	4316
MLE Mean (bias corrected)	0.326 MLE Sd (bias corrected)	0.129
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	4164 Adjusted Chi Square Value (N/A, β)	4163
95% Gamma Approximate UCL (use when n>=50)	0.338 95% Gamma Adjusted UCL (use when n<50)	0.338
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.114 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.327 Mean in Log Scale	-1.178
SD in Original Scale	0.122 SD in Log Scale	0.348
95% t UCL (assumes normality of ROS data)	0.338 95% Percentile Bootstrap UCL	0.339
95% BCA Bootstrap UCL	0.339 95% Bootstrap t UCL	0.339
95% H-UCL (Log ROS)	0.338	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.275 Mean in Log Scale	-1.324
SD in Original Scale	0.095 SD in Log Scale	0.225
95% t UCL (Assumes normality)	0.284 95% H-Stat UCL	0.279
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.342 95% KM (% Bootstrap) UCL	0.343
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (volatile organics (ug/l)***bromomethane (methyl bromide)***74-83-9***ug/l****)		
General Statistics		
Total Number of Observations	335 Number of Distinct Observations	5
Number of Detects	4 Number of Non-Detects	331
Number of Distinct Detects	4 Number of Distinct Non-Detects	1
Minimum Detect	0.26 Minimum Non-Detect	1
Maximum Detect	0.6 Maximum Non-Detect	1
Variance Detects	0.026 Percent Non-Detects	98.81%
Mean Detects	0.393 SD Detects	0.161
Median Detects	0.355 CV Detects	0.41
Skewness Detects	0.777 Kurtosis Detects	-1.666
Mean of Logged Detects	-0.997 SD of Logged Detects	0.403
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.883 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748 Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.276 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443 Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.393 Standard Error of Mean	0.0806
SD	0.14 95% KM (BCA) UCL	N/A
95% KM (t) UCL	5.25E-01 95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.525 95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.634 95% KM Chebyshev UCL	0.744
97.5% KM Chebyshev UCL	0.896 99% KM Chebyshev UCL	1.194
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.397 Anderson-Darling GOF Test	
5% A-D Critical Value	0.658 Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.314 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.395 Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	8.249	k star (bias corrected MLE)	2.229
Theta hat (MLE)	0.0476	Theta star (bias corrected MLE)	0.176
nu hat (MLE)	65.99	nu star (bias corrected)	17.83
MLE Mean (bias corrected)	0.393	MLE Sd (bias corrected)	0.263

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	7.913	nu hat (KM)	5302
Approximate Chi Square Value (N/A, α)	5133	Adjusted Chi Square Value (N/A, β)	5133
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.405	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.405

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.407
Maximum	1.181	Median	0.383
SD	0.216	CV	0.53
k hat (MLE)	2.817	k star (bias corrected MLE)	2.793
Theta hat (MLE)	0.145	Theta star (bias corrected MLE)	0.146
nu hat (MLE)	1887	nu star (bias corrected)	1872
MLE Mean (bias corrected)	0.407	MLE Sd (bias corrected)	0.244
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1772	Adjusted Chi Square Value (N/A, β)	1772
95% Gamma Approximate UCL (use when $n \geq 50$)	0.43	95% Gamma Adjusted UCL (use when $n < 50$)	N/A

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.884	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.281	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.423	Mean in Log Scale	-0.997
SD in Original Scale	0.235	SD in Log Scale	0.527
95% t UCL (assumes normality of ROS data)	0.445	95% Percentile Bootstrap UCL	0.444
95% BCA Bootstrap UCL	0.445	95% Bootstrap t UCL	0.446
95% H-UCL (Log ROS)	0.446		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-0.997	95% H-UCL (KM -Log)	0.405
KM SD (logged)	0.349	95% Critical H Value (KM-Log)	1.728
KM Standard Error of Mean (logged)	0.202		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.499	Mean in Log Scale	-0.697
SD in Original Scale	0.0192	SD in Log Scale	0.0505
95% t UCL (Assumes normality)	0.5	95% H-Stat UCL	N/A

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.525	95% KM (Percentile Bootstrap) UCL	N/A
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Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (volatile organics (ug/l)***carbon disulfide***75-15-0***ug/l***t)

General Statistics

Total Number of Observations	335	Number of Distinct Observations	20
Number of Detects	25	Number of Non-Detects	310
Number of Distinct Detects	19	Number of Distinct Non-Detects	1
Minimum Detect	0.3	Minimum Non-Detect	5
Maximum Detect	2.8	Maximum Non-Detect	5
Variance Detects	0.441	Percent Non-Detects	92.54%
Mean Detects	0.797	SD Detects	0.664
Median Detects	0.54	CV Detects	0.833
Skewness Detects	2.022	Kurtosis Detects	3.759
Mean of Logged Detects	-0.465	SD of Logged Detects	0.661

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.729	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.227	Lilliefors GOF Test
5% Lilliefors Critical Value	0.177	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.797	Standard Error of Mean 0.133
SD	0.65	95% KM (BCA) UCL 1.049
95% KM (t) UCL	1.016	95% KM (Percentile Bootstrap) UCL 1.025
95% KM (z) UCL	1.016	95% KM Bootstrap t UCL 1.178
90% KM Chebyshev UCL	1.195	95% KM Chebyshev UCL 1.376
97.5% KM Chebyshev UCL	1.626	99% KM Chebyshev UCL 2.118
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.069	Anderson-Darling GOF Test
5% A-D Critical Value	0.755	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.153	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.177	Detected data appear Gamma Distributed at 5% Significance Level
Detected data follow Appr. Gamma Distribution at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.246	k star (bias corrected MLE) 2.004
Theta hat (MLE)	0.355	Theta star (bias corrected MLE) 0.398
nu hat (MLE)	112.3	nu star (bias corrected) 100.2
MLE Mean (bias corrected)	0.797	MLE Sd (bias corrected) 0.563
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.503	nu hat (KM) 1007
Approximate Chi Square Value (N/A, α)	934.2	Adjusted Chi Square Value (N/A, β) 933.9
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.859	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.859
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.827
Maximum	3.769	Median 0.667
SD	0.688	CV 0.832
k hat (MLE)	1.073	k star (bias corrected MLE) 1.065
Theta hat (MLE)	0.771	Theta star (bias corrected MLE) 0.777
nu hat (MLE)	718.6	nu star (bias corrected) 713.5
MLE Mean (bias corrected)	0.827	MLE Sd (bias corrected) 0.802
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (713.49, α)	652.5	Adjusted Chi Square Value (713.49, β) 652.3
95% Gamma Approximate UCL (use when $n \geq 50$)	0.904	95% Gamma Adjusted UCL (use when $n < 50$) 0.905
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.908	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.136	Lilliefors GOF Test
5% Lilliefors Critical Value	0.177	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.795	Mean in Log Scale -0.465
SD in Original Scale	0.603	SD in Log Scale 0.688
95% t UCL (assumes normality of ROS data)	0.85	95% Percentile Bootstrap UCL 0.852
95% BCA Bootstrap UCL	0.854	95% Bootstrap t UCL 0.856
95% H-UCL (Log ROS)	0.854	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-0.465	95% H-UCL (KM -Log) 0.827
KM SD (logged)	0.648	95% Critical H Value (KM-Log) 1.873
KM Standard Error of Mean (logged)	0.132	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	2.373	Mean in Log Scale 0.813
SD in Original Scale	0.482	SD in Log Scale 0.405
95% t UCL (Assumes normality)	2.416	95% H-Stat UCL 2.544
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		

95% KM (t) UCL	1.016	95% GROS Approximate Gamma UCL	0.904
95% Approximate Gamma KM-UCL	0.859		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (volatile organics (ug/l)***chlorobenzene***108-90-7***ug/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	6
Number of Detects	6	Number of Non-Detects	329
Number of Distinct Detects	5	Number of Distinct Non-Detects	1
Minimum Detect	0.23	Minimum Non-Detect	0.5
Maximum Detect	1	Maximum Non-Detect	0.5
Variance Detects	0.0937	Percent Non-Detects	98.21%
Mean Detects	0.433	SD Detects	0.306
Median Detects	0.28	CV Detects	0.707
Skewness Detects	1.674	Kurtosis Detects	2.363
Mean of Logged Detects	-1.004	SD of Logged Detects	0.599
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.755	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.311	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.261	Standard Error of Mean	0.0199
SD	0.0569	95% KM (BCA) UCL	0.324
95% KM (t) UCL	0.294	95% KM (Percentile Bootstrap) UCL	0.301
95% KM (z) UCL	0.293	95% KM Bootstrap t UCL	0.438
90% KM Chebyshev UCL	0.32	95% KM Chebyshev UCL	0.348
97.5% KM Chebyshev UCL	0.385	99% KM Chebyshev UCL	0.459
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.659	Anderson-Darling GOF Test	
5% A-D Critical Value	0.701	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.291	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.334	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.133	k star (bias corrected MLE)	1.678
Theta hat (MLE)	0.138	Theta star (bias corrected MLE)	0.258
nu hat (MLE)	37.6	nu star (bias corrected)	20.13
MLE Mean (bias corrected)	0.433	MLE Sd (bias corrected)	0.335
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	20.98	nu hat (KM)	14057
Approximate Chi Square Value (N/A, α)	13782	Adjusted Chi Square Value (N/A, β)	13781
95% Gamma Approximate KM-UCL (use when n>=50)	0.266	95% Gamma Adjusted KM-UCL (use when n<50)	0.266
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0708	Mean	0.273
Maximum	1	Median	0.249
SD	0.126	CV	0.462
k hat (MLE)	5.084	k star (bias corrected MLE)	5.04
Theta hat (MLE)	0.0537	Theta star (bias corrected MLE)	0.0542
nu hat (MLE)	3406	nu star (bias corrected)	3377
MLE Mean (bias corrected)	0.273	MLE Sd (bias corrected)	0.122
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3243	Adjusted Chi Square Value (N/A, β)	3242
95% Gamma Approximate UCL (use when n>=50)	0.284	95% Gamma Adjusted UCL (use when n<50)	0.284
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.819	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.26	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.279	Mean in Log Scale	-1.341

SD in Original Scale	0.107	SD in Log Scale	0.364
95% t UCL (assumes normality of ROS data)	0.289	95% Percentile Bootstrap UCL	0.29
95% BCA Bootstrap UCL	0.289	95% Bootstrap t UCL	0.29
95% H-UCL (Log ROS)	0.289		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.359	95% H-UCL (KM -Log)	26.40%
KM SD (logged)	0.157	95% Critical H Value (KM-Log)	1.671
KM Standard Error of Mean (logged)	0.072		
DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	0.253	Mean in Log Scale	-137.90%
SD in Original Scale	0.0447	SD in Log Scale	0.0892
95% t UCL (Assumes normality)	0.257	95% H-Stat UCL	N/A
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.294	95% KM (Percentile Bootstrap) UCL	0.301
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (volatile organics (ug/l)***chloroform***67-66-3***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	8
Number of Detects	17	Number of Non-Detects	318
Number of Distinct Detects	7	Number of Distinct Non-Detects	1
Minimum Detect	0.2	Minimum Non-Detect	0.75
Maximum Detect	0.39	Maximum Non-Detect	0.75
Variance Detects	0.00259	Percent Non-Detects	94.93%
Mean Detects	0.229	SD Detects	0.0509
Median Detects	0.21	CV Detects	0.222
Skewness Detects	2.446	Kurtosis Detects	6.218
Mean of Logged Detects	-1.493	SD of Logged Detects	0.186
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.639	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.892	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.291	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.215	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.229	Standard Error of Mean	0.0123
SD	0.0493	95% KM (BCA) UCL	0.249
95% KM (t) UCL	0.249	95% KM (Percentile Bootstrap) UCL	0.251
95% KM (z) UCL	0.249	95% KM Bootstrap t UCL	0.277
90% KM Chebyshev UCL	0.266	95% KM Chebyshev UCL	0.283
97.5% KM Chebyshev UCL	0.306	99% KM Chebyshev UCL	0.352
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.163	Anderson-Darling GOF Test	
5% A-D Critical Value	0.738	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.295	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.209	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	27.4	k star (bias corrected MLE)	22.6
Theta hat (MLE)	0.00835	Theta star (bias corrected MLE)	0.0101
nu hat (MLE)	931.6	nu star (bias corrected)	768.5
MLE Mean (bias corrected)	0.229	MLE Sd (bias corrected)	0.0481
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	21.51	nu hat (KM)	14414
Approximate Chi Square Value (N/A, α)	14135	Adjusted Chi Square Value (N/A, β)	14134
95% Gamma Approximate KM-UCL (use when n>=50)	0.233	95% Gamma Adjusted KM-UCL (use when n<50)	0.233
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			

Minimum	0.119	Mean	0.23
Maximum	0.39	Median	0.226
SD	0.0469	CV	0.204
k hat (MLE)	24.23	k star (bias corrected MLE)	24.02
Theta hat (MLE)	0.00947	Theta star (bias corrected MLE)	0.00956
nu hat (MLE)	16235	nu star (bias corrected)	16091
MLE Mean (bias corrected)	0.23	MLE Sd (bias corrected)	0.0468
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	15797	Adjusted Chi Square Value (N/A, β)	15796
95% Gamma Approximate UCL (use when n>=50)	0.234	95% Gamma Adjusted UCL (use when n<50)	0.234

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.691	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.892	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.288	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.215	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.228	Mean in Log Scale	-149.30%
SD in Original Scale	0.04	SD in Log Scale	0.172
95% t UCL (assumes normality of ROS data)	0.232	95% Percentile Bootstrap UCL	0.231
95% BCA Bootstrap UCL	0.232	95% Bootstrap t UCL	0.231
95% H-UCL (Log ROS)	0.232		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.368	Mean in Log Scale	-1.007
SD in Original Scale	0.034	SD in Log Scale	0.12
95% t UCL (Assumes normality)	0.371	95% H-Stat UCL	0.372
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	0.249	95% KM (% Bootstrap) UCL	0.251
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (volatile organics (ug/l)***dichloromethane (methylene chloride)***75-09-2***ug/l****t)

General Statistics

Total Number of Observations	335	Number of Distinct Observations	4
Number of Detects	6	Number of Non-Detects	329
Number of Distinct Detects	3	Number of Distinct Non-Detects	1
Minimum Detect	0.31	Minimum Non-Detect	3
Maximum Detect	0.61	Maximum Non-Detect	3
Variance Detects	0.0143	Percent Non-Detects	98.21%
Mean Detects	0.367	SD Detects	0.12
Median Detects	0.32	CV Detects	0.326
Skewness Detects	2.413	Kurtosis Detects	5.858
Mean of Logged Detects	-1.038	SD of Logged Detects	0.268

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.561	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.454	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.367	Standard Error of Mean	0.0488
SD	0.109	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.447	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.447	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.513	95% KM Chebyshev UCL	0.58
97.5% KM Chebyshev UCL	0.672	99% KM Chebyshev UCL	0.853

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.376	Anderson-Darling GOF Test	
5% A-D Critical Value	0.698	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.455	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.332	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	14.77	k star (bias corrected MLE)	7.498
Theta hat (MLE)	0.0248	Theta star (bias corrected MLE)	0.0489
nu hat (MLE)	177.3	nu star (bias corrected)	89.97
MLE Mean (bias corrected)	0.367	MLE Sd (bias corrected)	0.134
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	11.28	nu hat (KM)	7555
Approximate Chi Square Value (N/A, α)	7354	Adjusted Chi Square Value (N/A, β)	7354
95% Gamma Approximate KM-UCL (use when n>=50)	0.377	95% Gamma Adjusted KM-UCL (use when n<50)	0.377
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.113	Mean	0.371
Maximum	0.764	Median	0.36
SD	0.117	CV	0.314
k hat (MLE)	9.925	k star (bias corrected MLE)	9.838
Theta hat (MLE)	0.0374	Theta star (bias corrected MLE)	0.0378
nu hat (MLE)	6650	nu star (bias corrected)	6591
MLE Mean (bias corrected)	0.371	MLE Sd (bias corrected)	0.118
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	6404	Adjusted Chi Square Value (N/A, β)	6403
95% Gamma Approximate UCL (use when n>=50)	0.382	95% Gamma Adjusted UCL (use when n<50)	0.382
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.585	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.438	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.366	Mean in Log Scale	-1.038
SD in Original Scale	0.0945	SD in Log Scale	0.254
95% t UCL (assumes normality of ROS data)	0.374	95% Percentile Bootstrap UCL	0.374
95% BCA Bootstrap UCL	0.375	95% Bootstrap t UCL	0.375
95% H-UCL (Log ROS)	0.375		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.48	Mean in Log Scale	0.38
SD in Original Scale	0.151	SD in Log Scale	0.194
95% t UCL (Assumes normality)	1.493	95% H-Stat UCL	1.516
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.447	95% KM (% Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (volatile organics (ug/l)***methyl tert-butyl ether (mtbe)***1634-04-4***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	18
Number of Detects	38	Number of Non-Detects	297
Number of Distinct Detects	17	Number of Distinct Non-Detects	1
Minimum Detect	0.16	Minimum Non-Detect	1
Maximum Detect	0.6	Maximum Non-Detect	1
Variance Detects	0.0189	Percent Non-Detects	88.66%
Mean Detects	0.271	SD Detects	0.137
Median Detects	0.2	CV Detects	0.507
Skewness Detects	1.164	Kurtosis Detects	-0.0717
Mean of Logged Detects	-1.409	SD of Logged Detects	0.443
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.763	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.33	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.271 Standard Error of Mean	0.0223
SD	0.136 95% KM (BCA) UCL	0.311
95% KM (t) UCL	0.308 95% KM (Percentile Bootstrap) UCL	0.309
95% KM (z) UCL	0.308 95% KM Bootstrap t UCL	0.315
90% KM Chebyshev UCL	0.338 95% KM Chebyshev UCL	0.369
97.5% KM Chebyshev UCL	0.411 99% KM Chebyshev UCL	0.493
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.102 Anderson-Darling GOF Test	
5% A-D Critical Value	0.751 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.32 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.144 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	4.933 k star (bias corrected MLE)	4.561
Theta hat (MLE)	0.055 Theta star (bias corrected MLE)	0.0595
nu hat (MLE)	374.9 nu star (bias corrected)	346.7
MLE Mean (bias corrected)	0.271 MLE Sd (bias corrected)	0.127
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	4.002 nu hat (KM)	2681
Approximate Chi Square Value (N/A, α)	2562 Adjusted Chi Square Value (N/A, β)	2561
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.284 95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.284
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0226 Mean	0.274
Maximum	0.788 Median	0.248
SD	0.138 CV	0.503
k hat (MLE)	3.821 k star (bias corrected MLE)	3.788
Theta hat (MLE)	0.0716 Theta star (bias corrected MLE)	0.0722
nu hat (MLE)	2560 nu star (bias corrected)	2538
MLE Mean (bias corrected)	0.274 MLE Sd (bias corrected)	0.141
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2422 Adjusted Chi Square Value (N/A, β)	2422
95% Gamma Approximate UCL (use when $n \geq 50$)	0.287 95% Gamma Adjusted UCL (use when $n < 50$)	0.287
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.812 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.938 Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.306 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.144 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.268 Mean in Log Scale	-1.409
SD in Original Scale	0.121 SD in Log Scale	43.10%
95% t UCL (assumes normality of ROS data)	0.279 95% Percentile Bootstrap UCL	0.279
95% BCA Bootstrap UCL	0.281 95% Bootstrap t UCL	0.28
95% H-UCL (Log ROS)	0.28	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.474 Mean in Log Scale	-0.774
SD in Original Scale	0.0858 SD in Log Scale	0.271
95% t UCL (Assumes normality)	0.482 95% H-Stat UCL	0.49
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.308 95% KM (% Bootstrap) UCL	0.309
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (volatile organics (ug/l)***tetrachloroethene (pce)***127-18-4***ug/l****)		
General Statistics		
Total Number of Observations	335 Number of Distinct Observations	13
Number of Detects	23 Number of Non-Detects	312
Number of Distinct Detects	12 Number of Distinct Non-Detects	1

Minimum Detect	0.18	Minimum Non-Detect	0.5
Maximum Detect	0.73	Maximum Non-Detect	0.5
Variance Detects	0.0189	Percent Non-Detects	93.13%
Mean Detects	0.259	SD Detects	0.138
Median Detects	0.21	CV Detects	0.532
Skewness Detects	2.524	Kurtosis Detects	6.308
Mean of Logged Detects	-1.439	SD of Logged Detects	0.383
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.61	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.337	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.185	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.224	Standard Error of Mean	0.0134
SD	0.0683	95% KM (BCA) UCL	0.248
95% KM (t) UCL	0.247	95% KM (Percentile Bootstrap) UCL	0.247
95% KM (z) UCL	0.246	95% KM Bootstrap t UCL	0.269
90% KM Chebyshev UCL	0.265	95% KM Chebyshev UCL	0.283
97.5% KM Chebyshev UCL	0.308	99% KM Chebyshev UCL	0.358
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.947	Anderson-Darling GOF Test	
5% A-D Critical Value	0.746	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.299	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.182	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.909	k star (bias corrected MLE)	5.167
Theta hat (MLE)	0.0438	Theta star (bias corrected MLE)	0.0501
nu hat (MLE)	271.8	nu star (bias corrected)	237.7
MLE Mean (bias corrected)	0.259	MLE Sd (bias corrected)	0.114
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	10.78	nu hat (KM)	7225
Approximate Chi Square Value (N/A, α)	7028	Adjusted Chi Square Value (N/A, β)	7028
95% Gamma Approximate KM-UCL (use when n>=50)	0.231	95% Gamma Adjusted KM-UCL (use when n<50)	0.231
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0543	Mean	0.232
Maximum	0.73	Median	0.216
SD	0.0942	CV	0.406
k hat (MLE)	6.297	k star (bias corrected MLE)	6.242
Theta hat (MLE)	0.0368	Theta star (bias corrected MLE)	0.0372
nu hat (MLE)	4219	nu star (bias corrected)	4182
MLE Mean (bias corrected)	0.232	MLE Sd (bias corrected)	0.0928
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	4033	Adjusted Chi Square Value (N/A, β)	4033
95% Gamma Approximate UCL (use when n>=50)	0.241	95% Gamma Adjusted UCL (use when n<50)	0.241
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.717	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.277	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.185	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.232	Mean in Log Scale	-1.508
SD in Original Scale	0.0743	SD in Log Scale	29.90%
95% t UCL (assumes normality of ROS data)	0.238	95% Percentile Bootstrap UCL	0.238
95% BCA Bootstrap UCL	0.238	95% Bootstrap t UCL	0.239
95% H-UCL (Log ROS)	0.238		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.251	Mean in Log Scale	-1.39
SD in Original Scale	0.0354	SD in Log Scale	0.0992
95% t UCL (Assumes normality)	0.254	95% H-Stat UCL	N/A
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (t) UCL	0.247 95% KM (% Bootstrap) UCL	0.247
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (volatile organics (ug/l)***toluene***108-88-3***ug/l***t)		
General Statistics		
Total Number of Observations	335	Number of Distinct Observations 10
Number of Detects	15	Number of Non-Detects 320
Number of Distinct Detects	9	Number of Distinct Non-Detects 1
Minimum Detect	0.19	Minimum Non-Detect 0.75
Maximum Detect	0.37	Maximum Non-Detect 0.75
Variance Detects	0.00237	Percent Non-Detects 95.52%
Mean Detects	0.265	SD Detects 0.0487
Median Detects	0.27	CV Detects 0.184
Skewness Detects	0.157	Kurtosis Detects 0.352
Mean of Logged Detects	-1.345	SD of Logged Detects 0.188
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.881	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.144	Lilliefors GOF Test
5% Lilliefors Critical Value	0.229	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.265	Standard Error of Mean 0.0126
SD	0.047	95% KM (BCA) UCL 0.288
95% KM (t) UCL	0.285	95% KM (Percentile Bootstrap) UCL 0.285
95% KM (z) UCL	0.285	95% KM Bootstrap t UCL 0.286
90% KM Chebyshev UCL	0.302	95% KM Chebyshev UCL 0.319
97.5% KM Chebyshev UCL	0.343	99% KM Chebyshev UCL 0.39
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.439	Anderson-Darling GOF Test
5% A-D Critical Value	0.735	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.168	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.221	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	31	k star (bias corrected MLE) 24.85
Theta hat (MLE)	0.00854	Theta star (bias corrected MLE) 0.0107
nu hat (MLE)	930.1	nu star (bias corrected) 745.5
MLE Mean (bias corrected)	0.265	MLE Sd (bias corrected) 0.0531
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	31.67	nu hat (KM) 21221
Approximate Chi Square Value (N/A, α)	20884	Adjusted Chi Square Value (N/A, β) 20882
95% Gamma Approximate KM-UCL (use when n>=50)	0.269	95% Gamma Adjusted KM-UCL (use when n<50) 0.269
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.138	Mean 0.265
Maximum	0.436	Median 0.263
SD	0.0534	CV 0.201
k hat (MLE)	24.6	k star (bias corrected MLE) 24.38
Theta hat (MLE)	0.0108	Theta star (bias corrected MLE) 0.0109
nu hat (MLE)	16481	nu star (bias corrected) 16335
MLE Mean (bias corrected)	0.265	MLE Sd (bias corrected) 0.0538
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	16038	Adjusted Chi Square Value (N/A, β) 16037
95% Gamma Approximate UCL (use when n>=50)	0.27	95% Gamma Adjusted UCL (use when n<50) 0.27
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.934	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.881	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.176	Lilliefors GOF Test
5% Lilliefors Critical Value	0.229	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		

Mean in Original Scale	0.266	Mean in Log Scale	-1.345
SD in Original Scale	0.055	SD in Log Scale	0.205
95% t UCL (assumes normality of ROS data)	0.271	95% Percentile Bootstrap UCL	0.271
95% BCA Bootstrap UCL	0.271	95% Bootstrap t UCL	0.271
95% H-UCL (Log ROS)	0.271		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.345	95% H-UCL (KM -Log)	26.90%
KM SD (logged)	0.182	95% Critical H Value (KM-Log)	1.677
KM Standard Error of Mean (logged)	0.0486		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.37	Mean in Log Scale	-99.70%
SD in Original Scale	0.0249	SD in Log Scale	0.0848
95% t UCL (Assumes normality)	0.372	95% H-Stat UCL	N/A
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.285	95% KM (Percentile Bootstrap) UCL	0.285

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

RESULT_VALUE (volatile organics (ug/l)***total btex (u = 1/2)***tbtex_n***ug/l***t)

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	41
Number of Detects	71	Number of Non-Detects	264
Number of Distinct Detects	40	Number of Distinct Non-Detects	1
Minimum Detect	1.65	Minimum Non-Detect	1
Maximum Detect	2.63	Maximum Non-Detect	1
Variance Detects	0.0383	Percent Non-Detects	78.81%
Mean Detects	1.974	SD Detects	0.196
Median Detects	1.92	CV Detects	0.0992
Skewness Detects	1.277	Kurtosis Detects	1.444
Mean of Logged Detects	0.676	SD of Logged Detects	0.0944

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.889 Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	7.22E-07 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.16 Lilliefors GOF Test
5% Lilliefors Critical Value	0.105 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.206	Standard Error of Mean	0.0225
SD	0.408	95% KM (BCA) UCL	1.244
95% KM (t) UCL	1.243	95% KM (Percentile Bootstrap) UCL	1.243
95% KM (z) UCL	1.243	95% KM Bootstrap t UCL	1.244
90% KM Chebyshev UCL	1.274	95% KM Chebyshev UCL	1.304
97.5% KM Chebyshev UCL	1.347	99% KM Chebyshev UCL	1.43

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	2.287 Anderson-Darling GOF Test
5% A-D Critical Value	0.749 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.145 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.105 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	110.4	k star (bias corrected MLE)	105.7
Theta hat (MLE)	0.0179	Theta star (bias corrected MLE)	0.0187
nu hat (MLE)	15672	nu star (bias corrected)	15012
MLE Mean (bias corrected)	1.974	MLE Sd (bias corrected)	0.192

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	8.742	nu hat (KM)	5857
Approximate Chi Square Value (N/A, α)	5681	Adjusted Chi Square Value (N/A, β)	5680
95% Gamma Approximate KM-UCL (use when n>=50)	1.244	95% Gamma Adjusted KM-UCL (use when n<50)	1.244

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.431 Mean	1.429
Maximum	2.63 Median	1.416
SD	0.388 CV	0.272
k hat (MLE)	12.69 k star (bias corrected MLE)	12.58
Theta hat (MLE)	0.113 Theta star (bias corrected MLE)	0.114
nu hat (MLE)	8503 nu star (bias corrected)	8428
MLE Mean (bias corrected)	1.429 MLE Sd (bias corrected)	0.403
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	8216 Adjusted Chi Square Value (N/A, β)	8215
95% Gamma Approximate UCL (use when n>=50)	1.466 95% Gamma Adjusted UCL (use when n<50)	1.466
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.139 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.513 Mean in Log Scale	0.393
SD in Original Scale	0.315 SD in Log Scale	0.206
95% t UCL (assumes normality of ROS data)	1.541 95% Percentile Bootstrap UCL	1.541
95% BCA Bootstrap UCL	1.542 95% Bootstrap t UCL	1.542
95% H-UCL (Log ROS)	1.542	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.812 Mean in Log Scale	-0.403
SD in Original Scale	0.61 SD in Log Scale	56.20%
95% t UCL (Assumes normality)	0.867 95% H-Stat UCL	0.828
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	1.243 95% KM (% Bootstrap) UCL	1.243
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.		
RESULT_VALUE (volatile organics (ug/l)***trichloroethene (tce)***79-01-6***ug/l***t)		
General Statistics		
Total Number of Observations	335 Number of Distinct Observations	8
Number of Detects	8 Number of Non-Detects	327
Number of Distinct Detects	7 Number of Distinct Non-Detects	1
Minimum Detect	0.17 Minimum Non-Detect	0.5
Maximum Detect	2.6 Maximum Non-Detect	0.5
Variance Detects	0.92 Percent Non-Detects	97.61%
Mean Detects	0.771 SD Detects	0.959
Median Detects	0.305 CV Detects	1.244
Skewness Detects	1.54 Kurtosis Detects	0.737
Mean of Logged Detects	-0.828 SD of Logged Detects	1.056
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.66 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.424 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.274 Standard Error of Mean	0.0308
SD	0.172 95% KM (BCA) UCL	0.324
95% KM (t) UCL	0.325 95% KM (Percentile Bootstrap) UCL	0.323
95% KM (z) UCL	0.324 95% KM Bootstrap t UCL	0.334
90% KM Chebyshev UCL	0.366 95% KM Chebyshev UCL	0.408
97.5% KM Chebyshev UCL	0.466 99% KM Chebyshev UCL	0.58
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.136 Anderson-Darling GOF Test	
5% A-D Critical Value	0.735 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.396 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.301 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.014 k star (bias corrected MLE)	0.717

Theta hat (MLE)	0.761	Theta star (bias corrected MLE)	1.076
nu hat (MLE)	16.22	nu star (bias corrected)	11.47
MLE Mean (bias corrected)	0.771	MLE Sd (bias corrected)	0.911
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.521	nu hat (KM)	1689
Approximate Chi Square Value (N/A, α)	1594	Adjusted Chi Square Value (N/A, β)	1594
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.29	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.29
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.343
Maximum	2.6	Median	0.224
SD	0.38	CV	1.107
k hat (MLE)	0.758	k star (bias corrected MLE)	0.753
Theta hat (MLE)	0.452	Theta star (bias corrected MLE)	0.455
nu hat (MLE)	507.9	nu star (bias corrected)	504.7
MLE Mean (bias corrected)	0.343	MLE Sd (bias corrected)	0.395
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (504.73, α)	453.6	Adjusted Chi Square Value (504.73, β)	453.4
95% Gamma Approximate UCL (use when $n \geq 50$)	0.382	95% Gamma Adjusted UCL (use when $n < 50$)	0.382
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.782	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.344	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.313	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.345	Mean in Log Scale	-1.313
SD in Original Scale	0.282	SD in Log Scale	0.699
95% t UCL (assumes normality of ROS data)	0.37	95% Percentile Bootstrap UCL	0.371
95% BCA Bootstrap UCL	0.372	95% Bootstrap t UCL	0.375
95% H-UCL (Log ROS)	0.37		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.262	Mean in Log Scale	-1.373
SD in Original Scale	0.16	SD in Log Scale	17.50%
95% t UCL (Assumes normality)	0.277	95% H-Stat UCL	0.261
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.324		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.			
RESULT_VALUE (volatile organics (ug/l)***vinyl chloride***75-01-4***ug/l***t)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	325
Number of Distinct Detects	10	Number of Distinct Non-Detects	1
Minimum Detect	0.19	Minimum Non-Detect	1
Maximum Detect	0.35	Maximum Non-Detect	1
Variance Detects	0.00268	Percent Non-Detects	97.01%
Mean Detects	0.271	SD Detects	0.0517
Median Detects	0.275	CV Detects	0.191
Skewness Detects	0.091	Kurtosis Detects	-0.805
Mean of Logged Detects	-1.322	SD of Logged Detects	0.195
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.969	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.125	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.271	Standard Error of Mean	0.0164

SD	0.0491	95% KM (BCA) UCL	0.298
95% KM (t) UCL	0.298	95% KM (Percentile Bootstrap) UCL	0.298
95% KM (z) UCL	0.298	95% KM Bootstrap t UCL	0.302
90% KM Chebyshev UCL	0.32	95% KM Chebyshev UCL	0.342
97.5% KM Chebyshev UCL	0.373	99% KM Chebyshev UCL	0.434
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.186	Anderson-Darling GOF Test	
5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.266	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	29.92	k star (bias corrected MLE)	21.01
Theta hat (MLE)	0.00906	Theta star (bias corrected MLE)	0.0129
nu hat (MLE)	598.3	nu star (bias corrected)	420.2
MLE Mean (bias corrected)	0.271	MLE Sd (bias corrected)	0.0591
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	30.49	nu hat (KM)	20426
Approximate Chi Square Value (N/A, α)	20094	Adjusted Chi Square Value (N/A, β)	20093
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.275	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.275
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.127	Mean	0.272
Maximum	0.467	Median	0.269
SD	0.0607	CV	0.223
k hat (MLE)	19.89	k star (bias corrected MLE)	19.71
Theta hat (MLE)	0.0137	Theta star (bias corrected MLE)	0.0138
nu hat (MLE)	13326	nu star (bias corrected)	13208
MLE Mean (bias corrected)	0.272	MLE Sd (bias corrected)	0.0613
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	12941	Adjusted Chi Square Value (N/A, β)	12940
95% Gamma Approximate UCL (use when $n \geq 50$)	0.278	95% Gamma Adjusted UCL (use when $n < 50$)	0.278
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.97	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.127	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.273	Mean in Log Scale	-1.322
SD in Original Scale	0.0628	SD in Log Scale	0.228
95% t UCL (assumes normality of ROS data)	0.279	95% Percentile Bootstrap UCL	0.279
95% BCA Bootstrap UCL	0.279	95% Bootstrap t UCL	0.279
95% H-UCL (Log ROS)	0.279		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.322	95% H-UCL (KM -Log)	0.276
KM SD (logged)	0.185	95% Critical H Value (KM-Log)	1.677
KM Standard Error of Mean (logged)	0.0616		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.493	Mean in Log Scale	-0.712
SD in Original Scale	0.0399	SD in Log Scale	0.112
95% t UCL (Assumes normality)	0.497	95% H-Stat UCL	0.499
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.298	95% KM (Percentile Bootstrap) UCL	0.298

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, s for additional insight the user may want to consult a statistician.

Project Information		Financial Summary		Operational Metrics		Resource Allocation		Risk Assessment		Compliance & Audit		Reporting & Documentation		Stakeholder Engagement		Performance Indicators		Future Outlook	
Project ID	Project Name	Budget (USD)	Actual (USD)	Progress (%)	Completion Date	Team Lead	Team Size	Risk Level	Mitigation Strategy	Audit Status	Last Audit Date	Report Date	Report Type	Stakeholder Name	Stakeholder Role	KPI 1	KPI 2	Forecast	Notes
P001	Project Alpha	1000000	950000	85%	2023-12-31	John Doe	15	High	Regular communication	Completed	2023-11-15	2023-12-01	Quarterly	Stakeholder A	Client	95%	100%	On Track	Minor delays in procurement
P002	Project Beta	800000	780000	70%	2024-01-15	Jane Smith	12	Medium	Resource allocation	In Progress	2023-12-01	2023-12-10	Monthly	Stakeholder B	Manager	75%	80%	At Risk	Resource shortage in Q1
P003	Project Gamma	1200000	1150000	90%	2023-11-30	Mike Johnson	18	Low	Proactive monitoring	Completed	2023-10-20	2023-11-05	Quarterly	Stakeholder C	Client	90%	95%	On Track	Successful completion
P004	Project Delta	900000	880000	60%	2024-02-28	Sarah Lee	10	Medium	Regular communication	In Progress	2023-11-01	2023-11-20	Monthly	Stakeholder D	Manager	60%	65%	At Risk	Scope creep in Q2
P005	Project Epsilon	1100000	1080000	75%	2024-01-31	David Kim	14	High	Resource allocation	In Progress	2023-12-10	2023-12-20	Quarterly	Stakeholder E	Client	75%	80%	At Risk	Complex dependencies
P006	Project Zeta	750000	720000	55%	2024-03-15	Emily White	9	Medium	Proactive monitoring	In Progress	2023-11-20	2023-12-05	Monthly	Stakeholder F	Manager	55%	60%	At Risk	Timeline pressure
P007	Project Eta	1300000	1250000	80%	2023-12-15	Chris Brown	20	Low	Regular communication	Completed	2023-10-10	2023-11-01	Quarterly	Stakeholder G	Client	80%	85%	On Track	Minor issues resolved
P008	Project Theta	950000	920000	65%	2024-02-15	Alex Green	11	Medium	Resource allocation	In Progress	2023-11-10	2023-11-25	Monthly	Stakeholder H	Manager	65%	70%	At Risk	Scope changes
P009	Project Iota	1050000	1020000	70%	2024-01-20	Mia Black	13	High	Proactive monitoring	In Progress	2023-12-05	2023-12-15	Quarterly	Stakeholder I	Client	70%	75%	At Risk	Complex tasks
P010	Project Kappa	850000	830000	50%	2024-03-31	Noah Blue	8	Medium	Regular communication	In Progress	2023-11-05	2023-11-15	Monthly	Stakeholder J	Manager	50%	55%	At Risk	Resource constraints

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[illegible]

Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05150	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R	NC05150-00125-25	SE	N	#####	0	15	cm	0-15	cm	Alkylated / Total PAFH	34	1 T	SW012A	84514	Y	1	u	g	Y		Dry	NuN	NuN	PAH 34 NC05150	84514	0	1	PAH 34	17	PAH 17	Total PAFH	MDL	Total PAFH	1	Study Area
Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05250	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R	NC05250-00125-25	SE	N	#####	0	15	cm	0-15	cm	Alkylated / Total PAFH	34	1 T	SW012A	84514	Y	1	u	g	Y		Dry	NuN	NuN	PAH 17N NC05250	84514	0	1	PAH 17	17	PAH 17	Total PAFH	MDL	Total PAFH	1	Study Area
Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05250	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R	NC05250-00125-25	SE	N	#####	0	15	cm	0-15	cm	Alkylated / Total PAFH	34	1 T	SW012A	84514	Y	1	u	g	Y		Dry	NuN	NuN	PAH 17N NC05250	84514	0	1	PAH 17	17	PAH 17	Total PAFH	MDL	Total PAFH	1	Study Area
Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05250	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R	NC05250-00125-25	SE	N	#####	0	15	cm	0-15	cm	Alkylated / Total PAFH	34	1 T	SW012A	84514	Y	1	u	g	Y		Dry	NuN	NuN	PAH 17N NC05250	84514	0	1	PAH 17	17	PAH 17	Total PAFH	MDL	Total PAFH	1	Study Area
Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05250	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R	NC05250-00125-25	SE	N	#####	0	15	cm	0-15	cm	Alkylated / Total PAFH	34	1 T	SW012A	84514	Y	1	u	g	Y		Dry	NuN	NuN	PAH 17N NC05250	84514	0	1	PAH 17	17	PAH 17	Total PAFH	MDL	Total PAFH	1	Study Area
Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05250	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R	NC05250-00125-25	SE	N	#####	0	15	cm	0-15	cm	Alkylated / Total PAFH	34	1 T	SW012A	84514	Y	1	u	g	Y		Dry	NuN	NuN	PAH 17N NC05250	84514	0	1	PAH 17	17	PAH 17	Total PAFH	MDL	Total PAFH	1	Study Area
Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05250	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R	NC05250-00125-25	SE	N	#####	0	15	cm	0-15	cm	Alkylated / Total PAFH	34	1 T	SW012A	84514	Y	1	u	g	Y		Dry	NuN	NuN	PAH 17N NC05250	84514	0	1	PAH 17	17	PAH 17	Total PAFH	MDL	Total PAFH	1	Study Area
Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05250	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R	NC05250-00125-25	SE	N	#####	0	15	cm	0-15	cm	Alkylated / Total PAFH	34	1 T	SW012A	84514	Y	1	u	g	Y		Dry	NuN	NuN	PAH 17N NC05250	84514	0	1	PAH 17	17	PAH 17	Total PAFH	MDL	Total PAFH	1	Study Area
Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05250	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R	NC05250-00125-25	SE	N	#####	0	15	cm	0-15	cm	Alkylated / Total PAFH	34	1 T	SW012A	84514	Y	1	u	g	Y		Dry	NuN	NuN	PAH 17N NC05250	84514	0	1	PAH 17	17	PAH 17	Total PAFH	MDL	Total PAFH	1	Study Area
Cu-2***Total PAFH (177)***N***	Pha1	Surface Se NC05250	Newtown Creek	Cu-2	2.07	2.07	207	1003897	20454	NABENV1	20.2	18	Leadline	NABV8	21.5	R																																			

Dutch Kilm***Total Dutch/Fair TEL 1958 (1910)***Cduaf***n***ng	Pha202	Surface Se Du003501	Dutch Kilm	Dutch Kilm	0.014	0.04	0.9914	2.208614	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Dutch/Fair Total/Dose	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1460-58	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area	
Dutch Kilm***Fair PA47***AHM_34_NC***n***ng	Pha202	Surface Se Du003501	Dutch Kilm	Dutch Kilm	0.014	0.04	0.9914	2.208614	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Polyvetic Total/Fair PAH 17 T	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1746-04	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area	
Dutch Kilm***Copper***7450-50-0***n***ng	Pha202	Point Sour Du003501	Dutch Kilm	Dutch Kilm	0.456	0.04	1.346	100799	209473	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Polyvetic Total/Fair PAH 17 T	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1746-04	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area
Dutch Kilm***Copper***7450-50-0***n***ng	Pha202	Point Sour Du003501	Dutch Kilm	Dutch Kilm	0.456	0.04	1.346	100799	209473	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Polyvetic Total/Fair PAH 17 T	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1746-04	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area
Dutch Kilm***Copper***7450-50-0***n***ng	Pha202	Point Sour Du003501	Dutch Kilm	Dutch Kilm	0.456	0.04	1.346	100799	209473	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Polyvetic Total/Fair PAH 17 T	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1746-04	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area
Dutch Kilm***Copper***7450-50-0***n***ng	Pha202	Point Sour Du003501	Dutch Kilm	Dutch Kilm	0.456	0.04	1.346	100799	209473	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Polyvetic Total/Fair PAH 17 T	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1746-04	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area
Dutch Kilm***Copper***7450-50-0***n***ng	Pha202	Point Sour Du003501	Dutch Kilm	Dutch Kilm	0.456	0.04	1.346	100799	209473	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Polyvetic Total/Fair PAH 17 T	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1746-04	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area
Dutch Kilm***Copper***7450-50-0***n***ng	Pha202	Point Sour Du003501	Dutch Kilm	Dutch Kilm	0.456	0.04	1.346	100799	209473	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Polyvetic Total/Fair PAH 17 T	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1746-04	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area
Dutch Kilm***Copper***7450-50-0***n***ng	Pha202	Point Sour Du003501	Dutch Kilm	Dutch Kilm	0.456	0.04	1.346	100799	209473	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Polyvetic Total/Fair PAH 17 T	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1746-04	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area
Dutch Kilm***Copper***7450-50-0***n***ng	Pha202	Point Sour Du003501	Dutch Kilm	Dutch Kilm	0.456	0.04	1.346	100799	209473	NAD81	-18.311	1	Landline	NAVD88	17.5	R	0	15	0m	0-15m Polyvetic Total/Fair PAH 17 T	527002	0	Y	1	ng	Y	Y	Dry	NAN	NAN	STUff KN D00355	527002	0	1	1746-04	1746-04	2.37	2.8	1746-04	1746-04	1	Study Area
Dutch Kilm***Copper***7450-50-0***n***ng	Pha202	Point Sour Du003501	Dutch Kilm	Dutch Kilm	0.456	0.04	1.346	100799	209473	NAD81	-																															

East Branch***CapeMay***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Convective Copeper	57-12.5	-T	SW9128	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***Total PAM***PHM 34-NC***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***CapeMay***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y	Y	Dry	0.04	1.7	APWf	NAVD83	6.04	1	1	57-12.5	57-12.5	Cypside	INDIVIDU Cypside	1	Study Area
East Branch***12-12-11***mg***Ng	East Branch	0.164	2.084	1002431	2000816	NAD83/18	-2.176	N	East Branch	NAVD83	3.8	N	0.000000	0	15	cm	-0.15m	Abshviald Total PAM PHM 17 T	57-12.5	-T	E1518	6.17	U	N	0	mgHg	Y															

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CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Surface to NC30850 - Newtown Creek	CM2+	2.433	2.433	1000000	20821	NAB0381	-63.6	R	Leadline	NAV088	14.1	R	NC30750-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	NC30850	1.250568	0	1	TPCB	Con	TPCB	Total PCB	MOL	Total PCB	1	Study Area	
CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Surface to NC30850 - Newtown Creek	CM2+	2.51	2.51	1000000	20821	NAB0381	-63.6	R	Leadline	NAV088	7.8	R	NC30750-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	NC30850	1.470981	0	1	TPCB	Con	TPCB	Total PCB	MOL	Total PCB	1	Study Area	
CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Surface to NC30850 - Newtown Creek	CM2+	2.766	2.766	1000000	20821	NAB0381	-63.6	R	Leadline	NAV088	12.2	R	NC30750-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	NC30850	1.676134	0	1	TPCB	Con	TPCB	Total PCB	MOL	Total PCB	1	Study Area	
CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Point Source WC00155 - White Creek	White Creek	0.043	0.073	990802	1	20754	NAB0381	-25.08	R	Leadline	NAV088	23.8	R	WC01550-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	WC00155	1.361004	0	1	TPCB	Con	TPCB	Total PCB	MOL	Total PCB	1	Study Area
CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Surface to WC00155 - White Creek	White Creek	0.1	0.1	1000000	20754	NAB0381	-25.08	R	Leadline	NAV088	21.5	R	WC01550-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	WC00155	1.361004	0	1	TPCB	Con	TPCB	Total PCB	MOL	Total PCB	1	Study Area	
CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Point Source WC00155 - White Creek	White Creek	0.1	0.1	1000000	20754	NAB0381	-25.08	R	Leadline	NAV088	9.5	R	WC01550-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	WC01550	1.580835	0	1	TPCB	Con	TPCB	Total PCB	MOL	Total PCB	1	Study Area	
CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Surface to WC00155 - White Creek	White Creek	0.136	0.106	1000000	20754	NAB0381	-25.08	R	Leadline	NAV088	4.2	R	WC01550-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	WC01550	1.835442	0	1	TPCB	Con	TPCB	Total PCB	MOL	Total PCB	1	Study Area	
CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Point Source WC00155 - White Creek	White Creek	0.23	0.23	1000000	19886	NAB0381	-12.24	R	Leadline	NAV088	12.2	R	WC01550-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	WC01550	1.457018	0	1	TPCB	Con	TPCB	Total PCB	MOL	Total PCB	1	Study Area	
CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Point Source WC00155 - White Creek	White Creek	0.156	0.106	199681	1	20494	NAB0381	-10.33	R	Leadline	NAV088	7.9	R	WC01550-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	WC01550	1.536665	0	1	TPCB	Con	TPCB	Total PCB	MOL	Total PCB	1	Study Area
CM2+****Total PCB (Aroclor 125 and Congener)****TPCC_Cong_Aro125****mg/kg	Phase2	Surface to WC00155 - White Creek	White Creek	0.253	0.253	1000000	19886	NAB0381	-12.24	R	Leadline	NAV088	15.5	R	WC01550-00001-201	SE	N	*****	0	15	cm	0-15	cm	Total PCB	Total PCB	TPCB	Con	T	Y	1	mg/kg	Y	Dry	NAN	NAN	TPCB	Con	WC01550	1.457018	0	1	TPCB	Con	TP						

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UCL Statistics for Data Sets with Non-Detects

User Selected Options		
Date/Time of Computation	ProUCL 5.15/8/2018 4:13:41 PM	
From File	surfsed_combined_20161222_wupdatedPCB_NatGrid06_wcorrectedTOC_AREA.xls	
Full Precision	OFF	
Confidence Coefficient	95%	
Number of Bootstrap Operations	2000	

RESULT_VALUE_MDL (cm 0 - 2***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6****ng/kg)

General Statistics		
Total Number of Observations	65	Number of Distinct Observations 62
Number of Detects	64	Number of Non-Detects 1
Number of Distinct Detects	61	Number of Distinct Non-Detects 1
Minimum Detect	0.85	Minimum Non-Detect 1.13
Maximum Detect	22.6	Maximum Non-Detect 1.13
Variance Detects	11.66	Percent Non-Detects 1.54%
Mean Detects	6.483	SD Detects 3.414
Median Detects	6.42	CV Detects 0.527
Skewness Detects	2.055	Kurtosis Detects 8.712
Mean of Logged Detects	1.723	SD of Logged Detects 0.602

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.831	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	1.00E-09	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.155	Lilliefors GOF Test
5% Lilliefors Critical Value	0.111	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
KM Mean	6.397	KM Standard Error of Mean 0.429
KM SD	3.431	95% KM (BCA) UCL 7.148
95% KM (t) UCL	7.113	95% KM (Percentile Bootstrap) UCL 7.159
95% KM (z) UCL	7.103	95% KM Bootstrap t UCL 7.293
90% KM Chebyshev UCL	7.684	95% KM Chebyshev UCL 8.267
97.5% KM Chebyshev UCL	9.076	99% KM Chebyshev UCL 10.66

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.379	Anderson-Darling GOF Test
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.14	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.112	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	3.581	k star (bias corrected MLE) 3.423
Theta hat (MLE)	1.811	Theta star (bias corrected MLE) 1.894
nu hat (MLE)	458.3	nu star (bias corrected) 438.2
Mean (detects)	6.483	

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)		
For such situations, GROS method may yield incorrect values of UCLs and BTVs		
This is especially true when the sample size is small.		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.85	Mean 6.408
Maximum	22.6	Median 6.4
SD	3.44	CV 0.537
k hat (MLE)	3.415	k star (bias corrected MLE) 3.268
Theta hat (MLE)	1.877	Theta star (bias corrected MLE) 1.961
nu hat (MLE)	444	nu star (bias corrected) 424.8
Adjusted Level of Significance (β)	0.0463	
Approximate Chi Square Value (424.80, α)	378	Adjusted Chi Square Value (424.80, β) 377
95% Gamma Approximate UCL (use when n>=50)	7.202	95% Gamma Adjusted UCL (use when n<50) 7.221

Estimates of Gamma Parameters using KM Estimates		
Mean (KM)	6.397	SD (KM) 3.431
Variance (KM)	11.77	SE of Mean (KM) 0.429
k hat (KM)	3.477	k star (KM) 3.327
nu hat (KM)	452	nu star (KM) 432.5
theta hat (KM)	1.84	theta star (KM) 1.923
80% gamma percentile (KM)	9.013	90% gamma percentile (KM) 11.1
95% gamma percentile (KM)	13.04	99% gamma percentile (KM) 17.22

Gamma Kaplan-Meier (KM) Statistics		
Approximate Chi Square Value (432.49, α)	385.3	Adjusted Chi Square Value (432.49, β) 384.3
95% Gamma Approximate KM-UCL (use when n>=50)	7.181	95% Gamma Adjusted KM-UCL (use when n<50) 7.2

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Approximate Test Statistic	0.86	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	5.59E-08	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.176	Lilliefors GOF Test
5% Lilliefors Critical Value	0.111	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	6.41	Mean in Log Scale 1.705
SD in Original Scale	3.439	SD in Log Scale 0.615
95% t UCL (assumes normality of ROS data)	7.121	95% Percentile Bootstrap UCL 7.112
95% BCA Bootstrap UCL	7.248	95% Bootstrap t UCL 7.24
95% H-UCL (Log ROS)	7.718	

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution		
KM Mean (logged)	1.695	KM Geo Mean 5.446
KM SD (logged)	0.634	95% Critical H Value (KM-Log) 1.96
KM Standard Error of Mean (logged)	0.0793	95% H-UCL (KM -Log) 7.777
KM SD (logged)	0.634	95% Critical H Value (KM-Log) 1.96
KM Standard Error of Mean (logged)	0.0793	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	6.392	Mean in Log Scale 1.688
SD in Original Scale	3.466	SD in Log Scale 0.661
95% t UCL (Assumes normality)	7.11	95% H-Stat UCL 7.927
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (Chebyshev) UCL	8.267

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (cm 0 - 2***copper***7440-50-8***t***mg/kg)

General Statistics		
Total Number of Observations	111	Number of Distinct Observations 93
		Number of Missing Observations 0
Minimum	11.3	Mean 203.9
Maximum	783	Median 172
SD	131.7	Std. Error of Mean 12.5
Coefficient of Variation	0.646	Skewness 1.841
Normal GOF Test		
Shapiro Wilk Test Statistic	0.835	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.142	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0844	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	224.6	95% Adjusted-CLT UCL (Chen-1995) 226.8
		95% Modified-t UCL (Johnson-1978) 225
Gamma GOF Test		
A-D Test Statistic	1.536	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0933	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.0872	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	2.987	k star (bias corrected MLE) 2.913
Theta hat (MLE)	68.26	Theta star (bias corrected MLE) 70.01
nu hat (MLE)	663.2	nu star (bias corrected) 646.6
MLE Mean (bias corrected)	203.9	MLE Sd (bias corrected) 119.5
		Approximate Chi Square Value (0.05) 588.6
Adjusted Level of Significance	0.0478	Adjusted Chi Square Value 587.9
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	224	95% Adjusted Gamma UCL (use when n<50) 224.3
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.963	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0.0263	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0879	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0844	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	2.425	Mean of logged Data 5.141
Maximum of Logged Data	6.663	SD of logged Data 0.609
Assuming Lognormal Distribution		
95% H-UCL	229.7	90% Chebyshev (MVUE) UCL 243.8
95% Chebyshev (MVUE) UCL	261.2	97.5% Chebyshev (MVUE) UCL 285.4
99% Chebyshev (MVUE) UCL	333	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	224.5	95% Jackknife UCL 224.6
95% Standard Bootstrap UCL	224.5	95% Bootstrap-t UCL 228.9
95% Hall's Bootstrap UCL	229	95% Percentile Bootstrap UCL 225.6
95% BCA Bootstrap UCL	225.8	
90% Chebyshev(Mean, Sd) UCL	241.4	95% Chebyshev(Mean, Sd) UCL 258.4
97.5% Chebyshev(Mean, Sd) UCL	281.9	99% Chebyshev(Mean, Sd) UCL 328.2
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	258.4	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (cm 0 - 2***cyanide***57-12-5***t***mg/kg)

General Statistics		
Total Number of Observations	111	Number of Distinct Observations 44
Number of Detects	9	Number of Non-Detects 102
Number of Distinct Detects	9	Number of Distinct Non-Detects 38
Minimum Detect	0.37	Minimum Non-Detect 0.29
Maximum Detect	1.4	Maximum Non-Detect 0.88
Variance Detects	0.0963	Percent Non-Detects 91.89%
Mean Detects	0.791	SD Detects 0.31
Median Detects	0.79	CV Detects 0.392
Skewness Detects	0.654	Kurtosis Detects 0.71
Mean of Logged Detects	-0.305	SD of Logged Detects 0.406
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.958	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.16	Lilliefors GOF Test
5% Lilliefors Critical Value	0.274	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
KM Mean	0.403	KM Standard Error of Mean 0.0369
KM SD	0.165	95% KM (BCA) UCL 0.494
95% KM (t) UCL	0.464	95% KM (Percentile Bootstrap) UCL 0.483
95% KM (z) UCL	0.464	95% KM Bootstrap t UCL 0.484
90% KM Chebyshev UCL	0.514	95% KM Chebyshev UCL 0.564
97.5% KM Chebyshev UCL	0.633	99% KM Chebyshev UCL 0.77
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.184	Anderson-Darling GOF Test
5% A-D Critical Value	0.722	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.128	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.28	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	7.239 k star (bias corrected MLE)	4.9
Theta hat (MLE)	0.109 Theta star (bias corrected MLE)	0.161
nu hat (MLE)	130.3 nu star (bias corrected)	88.2
Mean (detects)	0.791	
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)		
For such situations, GROS method may yield incorrect values of UCLs and BTVs		
This is especially true when the sample size is small.		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	0.242
Maximum	1.4 Median	0.187
SD	0.233 CV	0.961
k hat (MLE)	0.966 k star (bias corrected MLE)	0.946
Theta hat (MLE)	0.251 Theta star (bias corrected MLE)	0.256
nu hat (MLE)	214.5 nu star (bias corrected)	210
Adjusted Level of Significance (β)	0.0478	
Approximate Chi Square Value (209.99, α)	177.5 Adjusted Chi Square Value (209.99, β)	177.1
95% Gamma Approximate UCL (use when n>=50)	0.287 95% Gamma Adjusted UCL (use when n<50)	0.288
Estimates of Gamma Parameters using KM Estimates		
Mean (KM)	0.403 SD (KM)	0.165
Variance (KM)	0.0271 SE of Mean (KM)	0.0369
k hat (KM)	5.995 k star (KM)	5.839
nu hat (KM)	1331 nu star (KM)	1296
theta hat (KM)	0.0673 theta star (KM)	0.069
80% gamma percentile (KM)	0.533 90% gamma percentile (KM)	0.626
95% gamma percentile (KM)	0.711 99% gamma percentile (KM)	0.889
Gamma Kaplan-Meier (KM) Statistics		
Approximate Chi Square Value (N/A, α)	1214 Adjusted Chi Square Value (N/A, β)	1213
95% Gamma Approximate KM-UCL (use when n>=50)	0.431 95% Gamma Adjusted KM-UCL (use when n<50)	0.431
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.976 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829 Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.133 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.347 Mean in Log Scale	-1.147
SD in Original Scale	0.18 SD in Log Scale	0.398
95% t UCL (assumes normality of ROS data)	0.376 95% Percentile Bootstrap UCL	0.377
95% BCA Bootstrap UCL	0.382 95% Bootstrap t UCL	0.383
95% H-UCL (Log ROS)	0.368	
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution		
KM Mean (logged)	-0.963 KM Geo Mean	0.382
KM SD (logged)	0.304 95% Critical H Value (KM-Log)	1.738
KM Standard Error of Mean (logged)	0.0956 95% H-UCL (KM -Log)	0.42
KM SD (logged)	0.304 95% Critical H Value (KM-Log)	1.738
KM Standard Error of Mean (logged)	0.0956	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.378 Mean in Log Scale	-1.022
SD in Original Scale	0.157 SD in Log Scale	0.29
95% t UCL (Assumes normality)	0.403 95% H-Stat UCL	0.394
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.464	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_ VALUE_ MDL (cm 0 - 2***lead***7439-92-1***t***mg/kg)		
General Statistics		
Total Number of Observations	111 Number of Distinct Observations	86
	Number of Missing Observations	0
Minimum	10.2 Mean	193.2
Maximum	3140 Median	152
SD	295.7 Std. Error of Mean	28.06
Coefficient of Variation	1.53 Skewness	9.228
Normal GOF Test		
Shapiro Wilk Test Statistic	0.282 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.348 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0844 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	239.7 95% Adjusted-CLT UCL (Chen-1995)	265.6
	95% Modified-t UCL (Johnson-1978)	243.8
Gamma GOF Test		
A-D Test Statistic	7.81 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.763 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.2 Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0876 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	2.285 k star (bias corrected MLE)	2.229
Theta hat (MLE)	84.55 Theta star (bias corrected MLE)	86.67
nu hat (MLE)	507.2 nu star (bias corrected)	494.8
MLE Mean (bias corrected)	193.2 MLE Sd (bias corrected)	129.4
	Approximate Chi Square Value (0.05)	444.2
Adjusted Level of Significance	0.0478 Adjusted Chi Square Value	443.6
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	215.2 95% Adjusted Gamma UCL (use when n<50)	215.5

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.67E-15	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.13	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0844	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.322	Mean of logged Data	5.029
Maximum of Logged Data	8.052	SD of logged Data	0.579
Assuming Lognormal Distribution			
95% H-UCL	200.5	90% Chebyshev (MVUE) UCL	212.3
95% Chebyshev (MVUE) UCL	226.8	97.5% Chebyshev (MVUE) UCL	246.9
99% Chebyshev (MVUE) UCL	286.3		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	239.3	95% Jackknife UCL	239.7
95% Standard Bootstrap UCL	238.8	95% Bootstrap-t UCL	353.8
95% Hall's Bootstrap UCL	424.9	95% Percentile Bootstrap UCL	245.1
95% BCA Bootstrap UCL	282.8		
90% Chebyshev(Mean, Sd) UCL	277.4	95% Chebyshev(Mean, Sd) UCL	315.5
97.5% Chebyshev(Mean, Sd) UCL	368.4	99% Chebyshev(Mean, Sd) UCL	472.4
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	315.5		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (cm 0 - 2***total dioxin/furan teq 1998 (fish)***tdioxurf***t***ng/kg)			
General Statistics			
Total Number of Observations	65	Number of Distinct Observations	65
		Number of Missing Observations	0
Minimum	3.025	Mean	95.44
Maximum	1337	Median	45.07
SD	189	Std. Error of Mean	23.45
Coefficient of Variation	1.981	Skewness	5.408
Normal GOF Test			
Shapiro Wilk Test Statistic	0.405	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.312	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.11	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	134.6	95% Adjusted-CLT UCL (Chen-1995)	150.8
		95% Modified-t UCL (Johnson-1978)	137.2
Gamma GOF Test			
A-D Test Statistic	2.978	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.784	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.178	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.114	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.911	k star (bias corrected MLE)	0.879
Theta hat (MLE)	104.7	Theta star (bias corrected MLE)	108.5
nu hat (MLE)	118.4	nu star (bias corrected)	114.3
MLE Mean (bias corrected)	95.44	MLE Sd (bias corrected)	101.8
		Approximate Chi Square Value (0.05)	90.63
Adjusted Level of Significance	0.0463	Adjusted Chi Square Value	90.15
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	120.4	95% Adjusted Gamma UCL (use when n<50)	121
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.97	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.289	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.103	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.11	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.107	Mean of logged Data	3.918
Maximum of Logged Data	7.198	SD of logged Data	1.032
Assuming Lognormal Distribution			
95% H-UCL	114.7	90% Chebyshev (MVUE) UCL	123.5
95% Chebyshev (MVUE) UCL	141.1	97.5% Chebyshev (MVUE) UCL	165.5
99% Chebyshev (MVUE) UCL	213.5		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	134	95% Jackknife UCL	134.6
95% Standard Bootstrap UCL	134	95% Bootstrap-t UCL	217.3
95% Hall's Bootstrap UCL	321.8	95% Percentile Bootstrap UCL	137.3
95% BCA Bootstrap UCL	154.4		
90% Chebyshev(Mean, Sd) UCL	165.8	95% Chebyshev(Mean, Sd) UCL	197.6
97.5% Chebyshev(Mean, Sd) UCL	241.9	99% Chebyshev(Mean, Sd) UCL	328.7
Suggested UCL to Use			
95% H-UCL	114.7		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only.			
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.			
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.			

Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

RESULT_VALUE_MDL (cm 0 - 2***total pah (17)***tpah_17***t***ug/kg)

General Statistics			
Total Number of Observations	111	Number of Distinct Observations	111
		Number of Missing Observations	0
Minimum	2231	Mean	26442
Maximum	574950	Median	19005
SD	53837	Std. Error of Mean	5110
Coefficient of Variation	2.036	Skewness	9.807
Normal GOF Test			
Shapiro Wilk Test Statistic	0.227	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.358	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0844	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	34918	95% Adjusted-CLT UCL (Chen-1995)	39930
		95% Modified-t UCL (Johnson-1978)	35711
Gamma GOF Test			
A-D Test Statistic	9.638	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.767	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.211	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0879	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.844	k star (bias corrected MLE)	1.8
Theta hat (MLE)	14341	Theta star (bias corrected MLE)	14690
nu hat (MLE)	409.3	nu star (bias corrected)	399.6
MLE Mean (bias corrected)	26442	MLE Sd (bias corrected)	19708
		Approximate Chi Square Value (0.05)	354.3
Adjusted Level of Significance	0.0478	Adjusted Chi Square Value	353.7
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	29826	95% Adjusted Gamma UCL (use when n<50)	29873
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.866	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	5.22E-15	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.138	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0844	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.71	Mean of logged Data	9.888
Maximum of Logged Data	13.26	SD of logged Data	0.589
Assuming Lognormal Distribution			
95% H-UCL	26038	90% Chebyshev (MVUE) UCL	27595
95% Chebyshev (MVUE) UCL	29506	97.5% Chebyshev (MVUE) UCL	32160
99% Chebyshev (MVUE) UCL	37372		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	34847	95% Jackknife UCL	34918
95% Standard Bootstrap UCL	34952	95% Bootstrap-t UCL	62064
95% Hall's Bootstrap UCL	67775	95% Percentile Bootstrap UCL	36273
95% BCA Bootstrap UCL	44296		
90% Chebyshev(Mean, Sd) UCL	41772	95% Chebyshev(Mean, Sd) UCL	48716
97.5% Chebyshev(Mean, Sd) UCL	58354	99% Chebyshev(Mean, Sd) UCL	77286
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	48716		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (cm 0 - 2***total pah (34)***tpah_34_nc***t***ug/kg)

General Statistics			
Total Number of Observations	111	Number of Distinct Observations	110
		Number of Missing Observations	0
Minimum	3744	Mean	52513
Maximum	1003340	Median	34277
SD	95303	Std. Error of Mean	9046
Coefficient of Variation	1.815	Skewness	9.222
Normal GOF Test			
Shapiro Wilk Test Statistic	0.292	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.333	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0844	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	67519	95% Adjusted-CLT UCL (Chen-1995)	75853
		95% Modified-t UCL (Johnson-1978)	68838
Gamma GOF Test			
A-D Test Statistic	5.989	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.768	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.155	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.088	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.724	k star (bias corrected MLE)	1.683
Theta hat (MLE)	30465	Theta star (bias corrected MLE)	31200
nu hat (MLE)	382.7	nu star (bias corrected)	373.7
MLE Mean (bias corrected)	52513	MLE Sd (bias corrected)	40477
		Approximate Chi Square Value (0.05)	329.9
Adjusted Level of Significance	0.0478	Adjusted Chi Square Value	329.3

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	59486	95% Adjusted Gamma UCL (use when n<50)	59583
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.932	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	9.03E-06	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.109	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0844	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	8.228	Mean of logged Data	10.55
Maximum of Logged Data	13.82	SD of logged Data	0.662
Assuming Lognormal Distribution			
95% H-UCL	53799	90% Chebyshev (MVUE) UCL	57293
95% Chebyshev (MVUE) UCL	61734	97.5% Chebyshev (MVUE) UCL	67898
99% Chebyshev (MVUE) UCL	80006		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	67392	95% Jackknife UCL	67519
95% Standard Bootstrap UCL	67471	95% Bootstrap-t UCL	97212
95% Hall's Bootstrap UCL	123986	95% Percentile Bootstrap UCL	70445
95% BCA Bootstrap UCL	81206		
90% Chebyshev(Mean, Sd) UCL	79651	95% Chebyshev(Mean, Sd) UCL	91943
97.5% Chebyshev(Mean, Sd) UCL	109004	99% Chebyshev(Mean, Sd) UCL	142518
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	91943		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (cm 0 - 2***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***mg/kg)			
General Statistics			
Total Number of Observations	111	Number of Distinct Observations	108
		Number of Missing Observations	0
Minimum	0.124	Mean	0.844
Maximum	2.975	Median	0.764
SD	0.466	Std. Error of Mean	0.0443
Coefficient of Variation	0.553	Skewness	1.994
Normal GOF Test			
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	2.22E-16	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.129	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0844	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.917	95% Adjusted-CLT UCL (Chen-1995)	0.926
		95% Modified-t UCL (Johnson-1978)	0.919
Gamma GOF Test			
A-D Test Statistic	0.634	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.757	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0603	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.087	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.792	k star (bias corrected MLE)	3.696
Theta hat (MLE)	0.223	Theta star (bias corrected MLE)	0.228
nu hat (MLE)	841.9	nu star (bias corrected)	820.5
MLE Mean (bias corrected)	0.844	MLE Sd (bias corrected)	0.439
		Approximate Chi Square Value (0.05)	755
Adjusted Level of Significance	0.0478	Adjusted Chi Square Value	754.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	0.917	95% Adjusted Gamma UCL (use when n<50)	0.918
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.968	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0744	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.084	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0844	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.089	Mean of logged Data	-0.307
Maximum of Logged Data	1.09	SD of logged Data	0.545
Assuming Lognormal Distribution			
95% H-UCL	0.94	90% Chebyshev (MVUE) UCL	0.992
95% Chebyshev (MVUE) UCL	1.056	97.5% Chebyshev (MVUE) UCL	1.145
99% Chebyshev (MVUE) UCL	1.319		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.917	95% Jackknife UCL	0.917
95% Standard Bootstrap UCL	0.916	95% Bootstrap-t UCL	0.93
95% Hall's Bootstrap UCL	0.941	95% Percentile Bootstrap UCL	0.919
95% BCA Bootstrap UCL	0.929		
90% Chebyshev(Mean, Sd) UCL	0.977	95% Chebyshev(Mean, Sd) UCL	1.037
97.5% Chebyshev(Mean, Sd) UCL	1.12	99% Chebyshev(Mean, Sd) UCL	1.284
Suggested UCL to Use			
95% Approximate Gamma UCL	0.917		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

RESULT_VALUE_MDL (cm 2+***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)

General Statistics		
Total Number of Observations	43	Number of Distinct Observations 43
Number of Detects	42	Number of Non-Detects 1
Number of Distinct Detects	42	Number of Distinct Non-Detects 1
Minimum Detect	2.96	Minimum Non-Detect 22
Maximum Detect	49.3	Maximum Non-Detect 22
Variance Detects	93.52	Percent Non-Detects 2.33%
Mean Detects	13.15	SD Detects 9.671
Median Detects	10.75	CV Detects 0.735
Skewness Detects	1.79	Kurtosis Detects 3.746
Mean of Logged Detects	2.354	SD of Logged Detects 0.669

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.798	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.196	Lilliefors GOF Test
5% Lilliefors Critical Value	0.135	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
KM Mean	13.06	KM Standard Error of Mean 1.467
KM SD	9.48	95% KM (BCA) UCL 15.43
95% KM (t) UCL	15.53	95% KM (Percentile Bootstrap) UCL 15.58
95% KM (z) UCL	15.48	95% KM Bootstrap t UCL 16.22
90% KM Chebyshev UCL	17.46	95% KM Chebyshev UCL 19.46
97.5% KM Chebyshev UCL	22.22	99% KM Chebyshev UCL 27.66

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.592	Anderson-Darling GOF Test
5% A-D Critical Value	0.758	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.108	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.138	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	2.406	k star (bias corrected MLE) 2.25
Theta hat (MLE)	5.466	Theta star (bias corrected MLE) 5.845
nu hat (MLE)	202.1	nu star (bias corrected) 189
Mean (detects)	13.15	

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)		
For such situations, GROS method may yield incorrect values of UCLs and BTVs		
This is especially true when the sample size is small.		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2.96	Mean 13.06
Maximum	49.3	Median 10.5
SD	9.572	CV 0.733
k hat (MLE)	2.448	k star (bias corrected MLE) 2.292
Theta hat (MLE)	5.337	Theta star (bias corrected MLE) 5.699
nu hat (MLE)	210.5	nu star (bias corrected) 197.1
Adjusted Level of Significance (β)	0.0444	
Approximate Chi Square Value (197.14, α)	165.7	Adjusted Chi Square Value (197.14, β) 164.7
95% Gamma Approximate UCL (use when n>=50)	15.55	95% Gamma Adjusted UCL (use when n<50) 15.64

Estimates of Gamma Parameters using KM Estimates		
Mean (KM)	13.06	SD (KM) 9.48
Variance (KM)	89.88	SE of Mean (KM) 1.467
k hat (KM)	1.899	k star (KM) 1.782
nu hat (KM)	163.3	nu star (KM) 153.3
theta hat (KM)	6.879	theta star (KM) 7.331
80% gamma percentile (KM)	19.83	90% gamma percentile (KM) 26.11
95% gamma percentile (KM)	32.15	99% gamma percentile (KM) 45.65

Gamma Kaplan-Meier (KM) Statistics		
Approximate Chi Square Value (153.27, α)	125.6	Adjusted Chi Square Value (153.27, β) 124.8
95% Gamma Approximate KM-UCL (use when n>=50)	15.94	95% Gamma Adjusted KM-UCL (use when n<50) 16.05

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.94	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0707	Lilliefors GOF Test
5% Lilliefors Critical Value	0.135	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	13.05	Mean in Log Scale 2.351
SD in Original Scale	9.575	SD in Log Scale 0.661
95% t UCL (assumes normality of ROS data)	15.51	95% Percentile Bootstrap UCL 15.59
95% BCA Bootstrap UCL	15.58	95% Bootstrap t UCL 16.35
95% H-UCL (Log ROS)	16.06	

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution		
KM Mean (logged)	2.349	KM Geo Mean 10.48
KM SD (logged)	0.658	95% Critical H Value (KM-Log) 2.026
KM Standard Error of Mean (logged)	0.102	95% H-UCL (KM -Log) 15.99
KM SD (logged)	0.658	95% Critical H Value (KM-Log) 2.026
KM Standard Error of Mean (logged)	0.102	

DL/2 Statistics		
DL/2 Normal		
DL/2 Log-Transformed		
Mean in Original Scale	13.1	Mean in Log Scale 2.355
SD in Original Scale	9.561	SD in Log Scale 0.661
95% t UCL (Assumes normality)	15.55	95% H-Stat UCL 16.13
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		

Suggested UCL to Use		
95% KM Adjusted Gamma UCL	16.05	95% GROS Adjusted Gamma UCL 15.64

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (cm 2+***copper***7440-50-8***t***mg/kg)

General Statistics		
Total Number of Observations	86	Number of Distinct Observations 82

	Number of Missing Observations		0
Minimum	121	Mean	3622
Maximum	37000	Median	2530
SD	5154	Std. Error of Mean	555.8
Coefficient of Variation	1.423	Skewness	4.37
Normal GOF Test			
Shapiro Wilk Test Statistic	0.55	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.265	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0957	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	4546	95% Adjusted-CLT UCL (Chen-1995)	4816
		95% Modified-t UCL (Johnson-1978)	4590
Gamma GOF Test			
A-D Test Statistic	1.787	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.78	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.124	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.099	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.119	k star (bias corrected MLE)	1.088
Theta hat (MLE)	3236	Theta star (bias corrected MLE)	3329
nu hat (MLE)	192.5	nu star (bias corrected)	187.1
MLE Mean (bias corrected)	3622	MLE Sd (bias corrected)	3472
		Approximate Chi Square Value (0.05)	156.5
Adjusted Level of Significance	0.0472	Adjusted Chi Square Value	156
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	4331	95% Adjusted Gamma UCL (use when n<50)	4344
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.986	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.833	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0767	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0957	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.796	Mean of logged Data	7.686
Maximum of Logged Data	10.52	SD of logged Data	0.996
Assuming Lognormal Distribution			
95% H-UCL	4548	90% Chebyshev (MVUE) UCL	4905
95% Chebyshev (MVUE) UCL	5522	97.5% Chebyshev (MVUE) UCL	6379
99% Chebyshev (MVUE) UCL	8061		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	4536	95% Jackknife UCL	4546
95% Standard Bootstrap UCL	4493	95% Bootstrap-t UCL	5149
95% Hall's Bootstrap UCL	5597	95% Percentile Bootstrap UCL	4663
95% BCA Bootstrap UCL	4821		
90% Chebyshev(Mean, Sd) UCL	5289	95% Chebyshev(Mean, Sd) UCL	6044
97.5% Chebyshev(Mean, Sd) UCL	7093	99% Chebyshev(Mean, Sd) UCL	9152
Suggested UCL to Use			
95% H-UCL	4548		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_ VALUE_ MDL (cm 2+***cyanide***57-12-5****mg/kg)			
General Statistics			
Total Number of Observations	86	Number of Distinct Observations	67
Number of Detects	46	Number of Non-Detects	40
Number of Distinct Detects	42	Number of Distinct Non-Detects	30
Minimum Detect	0.53	Minimum Non-Detect	0.313
Maximum Detect	9.66	Maximum Non-Detect	1.1
Variance Detects	5.339	Percent Non-Detects	46.51%
Mean Detects	2.504	SD Detects	2.311
Median Detects	1.55	CV Detects	0.923
Skewness Detects	1.761	Kurtosis Detects	2.512
Mean of Logged Detects	0.593	SD of Logged Detects	0.778
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.754	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.945	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.238	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.129	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	1.562	KM Standard Error of Mean	0.215
KM SD	1.957	95% KM (BCA) UCL	1.964
95% KM (t) UCL	1.92	95% KM (Percentile Bootstrap) UCL	1.933
95% KM (z) UCL	1.916	95% KM Bootstrap t UCL	2.011
90% KM Chebyshev UCL	2.207	95% KM Chebyshev UCL	2.499
97.5% KM Chebyshev UCL	2.904	99% KM Chebyshev UCL	3.699
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.732	Anderson-Darling GOF Test	
5% A-D Critical Value	0.765	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.165	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.133	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.688	k star (bias corrected MLE)	1.592
Theta hat (MLE)	1.484	Theta star (bias corrected MLE)	1.573

nu hat (MLE)	155.3	nu star (bias corrected)	146.5
Mean (detects)	2.504		
Gamma ROS Statistics using Imputed Non-Detects GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20) For such situations, GROS method may yield incorrect values of UCLs and BTVs This is especially true when the sample size is small. For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.344
Maximum	9.66	Median	0.712
SD	2.096	CV	1.559
k hat (MLE)	0.322	k star (bias corrected MLE)	0.318
Theta hat (MLE)	4.18	Theta star (bias corrected MLE)	4.225
nu hat (MLE)	55.31	nu star (bias corrected)	54.71
Adjusted Level of Significance (β)	0.0472		
Approximate Chi Square Value (54.71, α)	38.72	Adjusted Chi Square Value (54.71, β)	38.49
95% Gamma Approximate UCL (use when n>=50)	1.899	95% Gamma Adjusted UCL (use when n<50)	1.911
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	1.562	SD (KM)	1.957
Variance (KM)	3.83	SE of Mean (KM)	0.215
k hat (KM)	0.637	k star (KM)	0.623
nu hat (KM)	109.6	nu star (KM)	107.1
theta hat (KM)	2.452	theta star (KM)	2.509
80% gamma percentile (KM)	2.575	90% gamma percentile (KM)	4.029
95% gamma percentile (KM)	5.547	99% gamma percentile (KM)	9.205
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (107.11, α)	84.23	Adjusted Chi Square Value (107.11, β)	83.88
95% Gamma Approximate KM-UCL (use when n>=50)	1.987	95% Gamma Adjusted KM-UCL (use when n<50)	1.995
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.932	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.945	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.121	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.129	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.506	Mean in Log Scale	-0.187
SD in Original Scale	1.998	SD in Log Scale	1.04
95% t UCL (assumes normality of ROS data)	1.864	95% Percentile Bootstrap UCL	1.873
95% BCA Bootstrap UCL	1.905	95% Bootstrap t UCL	1.931
95% H-UCL (Log ROS)	1.842		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.0598	KM Geo Mean	0.942
KM SD (logged)	0.936	95% Critical H Value (KM-Log)	2.179
KM Standard Error of Mean (logged)	0.115	95% H-UCL (KM -Log)	1.821
KM SD (logged)	0.936	95% Critical H Value (KM-Log)	2.179
KM Standard Error of Mean (logged)	0.115		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.527	Mean in Log Scale	-0.118
SD in Original Scale	1.985	SD in Log Scale	0.968
95% t UCL (Assumes normality)	1.883	95% H-Stat UCL	1.791
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
KM H-UCL	1.821		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (cm 2+***lead***7439-92-1****mg/kg)			
General Statistics			
Total Number of Observations	86	Number of Distinct Observations	84
		Number of Missing Observations	0
Minimum	137	Mean	692.8
Maximum	1777	Median	618.8
SD	341.9	Std. Error of Mean	36.87
Coefficient of Variation	0.494	Skewness	0.968
Normal GOF Test			
Shapiro Wilk Test Statistic	0.933	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	2.28E-04	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.094	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0957	Data appear Normal at 5% Significance Level	
Data appear Approximate Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	754.1	95% Adjusted-CLT UCL (Chen-1995)	757.6
		95% Modified-t UCL (Johnson-1978)	754.8
Gamma GOF Test			
A-D Test Statistic	0.17	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.756	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0481	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0968	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.18	k star (bias corrected MLE)	4.042
Theta hat (MLE)	165.7	Theta star (bias corrected MLE)	171.4
nu hat (MLE)	719	nu star (bias corrected)	695.2
MLE Mean (bias corrected)	692.8	MLE Sd (bias corrected)	344.6
		Approximate Chi Square Value (0.05)	635.1
Adjusted Level of Significance	0.0472	Adjusted Chi Square Value	634.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	758.5	95% Adjusted Gamma UCL (use when n<50)	759.6
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.973	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.265	Data appear Lognormal at 5% Significance Level	

Lilliefors Test Statistic	0.0798	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0957	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.92	Mean of logged Data	6.416
Maximum of Logged Data	7.482	SD of logged Data	0.521
Assuming Lognormal Distribution			
95% H-UCL	778.4	90% Chebyshev (MVUE) UCL	824.5
95% Chebyshev (MVUE) UCL	881.1	97.5% Chebyshev (MVUE) UCL	959.6
99% Chebyshev (MVUE) UCL	1114		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	753.5	95% Jackknife UCL	754.1
95% Standard Bootstrap UCL	755.7	95% Bootstrap-t UCL	758.1
95% Hall's Bootstrap UCL	761	95% Percentile Bootstrap UCL	751.7
95% BCA Bootstrap UCL	757.8		
90% Chebyshev(Mean, Sd) UCL	803.4	95% Chebyshev(Mean, Sd) UCL	853.5
97.5% Chebyshev(Mean, Sd) UCL	923.1	99% Chebyshev(Mean, Sd) UCL	1060
Suggested UCL to Use			
95% Student's-t UCL	754.1		

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (cm 2+***total dioxin/furan teq 1998 (fish)***tdioxfurf***t***ng/kg)

General Statistics			
Total Number of Observations	43	Number of Distinct Observations	43
		Number of Missing Observations	0
Minimum	73.61	Mean	273.8
Maximum	652.5	Median	243.3
SD	159.9	Std. Error of Mean	24.38
Coefficient of Variation	0.584	Skewness	1.02
Normal GOF Test			
Shapiro Wilk Test Statistic	0.888	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.943	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.16	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.134	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	314.8	95% Adjusted-CLT UCL (Chen-1995)	318
		95% Modified-t UCL (Johnson-1978)	315.4
Gamma GOF Test			
A-D Test Statistic	0.335	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.755	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0868	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.136	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.207	k star (bias corrected MLE)	2.999
Theta hat (MLE)	85.38	Theta star (bias corrected MLE)	91.31
nu hat (MLE)	275.8	nu star (bias corrected)	257.9
MLE Mean (bias corrected)	273.8	MLE Sd (bias corrected)	158.1
		Approximate Chi Square Value (0.05)	221.7
Adjusted Level of Significance	0.0444	Adjusted Chi Square Value	220.5
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	318.5	95% Adjusted Gamma UCL (use when n<50)	320.2
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.967	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.943	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0673	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.134	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.299	Mean of logged Data	5.448
Maximum of Logged Data	6.481	SD of logged Data	0.589
Assuming Lognormal Distribution			
95% H-UCL	330.7	90% Chebyshev (MVUE) UCL	354.3
95% Chebyshev (MVUE) UCL	390.2	97.5% Chebyshev (MVUE) UCL	439.9
99% Chebyshev (MVUE) UCL	537.6		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	313.9	95% Jackknife UCL	314.8
95% Standard Bootstrap UCL	314.1	95% Bootstrap-t UCL	320.5
95% Hall's Bootstrap UCL	316.9	95% Percentile Bootstrap UCL	314.5
95% BCA Bootstrap UCL	316.2		
90% Chebyshev(Mean, Sd) UCL	346.9	95% Chebyshev(Mean, Sd) UCL	380.1
97.5% Chebyshev(Mean, Sd) UCL	426	99% Chebyshev(Mean, Sd) UCL	516.4
Suggested UCL to Use			
95% Adjusted Gamma UCL	320.2		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (cm 2+***total pah (17)***tpah_17***t***ug/kg)

General Statistics

Total Number of Observations	86	Number of Distinct Observations	86
		Number of Missing Observations	0
Minimum	24662	Mean	132915
Maximum	1211653	Median	73687
SD	184381	Std. Error of Mean	19882
Coefficient of Variation	1.387	Skewness	4.023
Normal GOF Test			
Shapiro Wilk Test Statistic	0.521	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.283	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0957	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	165979	95% Adjusted-CLT UCL (Chen-1995)	174835
		95% Modified-t UCL (Johnson-1978)	167417
Gamma GOF Test			
A-D Test Statistic	5.18	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.774	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.196	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0985	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.375	k star (bias corrected MLE)	1.334
Theta hat (MLE)	96697	Theta star (bias corrected MLE)	99610
nu hat (MLE)	236.4	nu star (bias corrected)	229.5
MLE Mean (bias corrected)	132915	MLE Sd (bias corrected)	115064
		Approximate Chi Square Value (0.05)	195.4
Adjusted Level of Significance	0.0472	Adjusted Chi Square Value	194.9
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	156084	95% Adjusted Gamma UCL (use when n<50)	156510
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.914	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.81E-06	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.117	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0957	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	10.11	Mean of logged Data	11.39
Maximum of Logged Data	14.01	SD of logged Data	0.781
Assuming Lognormal Distribution			
95% H-UCL	142934	90% Chebyshev (MVUE) UCL	153563
95% Chebyshev (MVUE) UCL	168961	97.5% Chebyshev (MVUE) UCL	190333
99% Chebyshev (MVUE) UCL	232313		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	165619	95% Jackknife UCL	165979
95% Standard Bootstrap UCL	165960	95% Bootstrap-t UCL	182089
95% Hall's Bootstrap UCL	184221	95% Percentile Bootstrap UCL	168991
95% BCA Bootstrap UCL	173891		
90% Chebyshev(Mean, Sd) UCL	192563	95% Chebyshev(Mean, Sd) UCL	219581
97.5% Chebyshev(Mean, Sd) UCL	257081	99% Chebyshev(Mean, Sd) UCL	330742
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	219581		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

RESULT_VALUE_MDL (cm 2+****total pah (34)***tpah_34_nc***t****ug/kg)

General Statistics			
Total Number of Observations	55	Number of Distinct Observations	55
		Number of Missing Observations	0
Minimum	51265	Mean	308844
Maximum	1785060	Median	148419
SD	385070	Std. Error of Mean	51923
Coefficient of Variation	1.247	Skewness	2.171
Normal GOF Test			
Shapiro Wilk Test Statistic	0.668	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	2.22E-15	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.294	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.119	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	395740	95% Adjusted-CLT UCL (Chen-1995)	410490
		95% Modified-t UCL (Johnson-1978)	398274
Gamma GOF Test			
A-D Test Statistic	3.682	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.778	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.242	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.123	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.081	k star (bias corrected MLE)	1.034
Theta hat (MLE)	285689	Theta star (bias corrected MLE)	298630
nu hat (MLE)	118.9	nu star (bias corrected)	113.8
MLE Mean (bias corrected)	308844	MLE Sd (bias corrected)	303694
		Approximate Chi Square Value (0.05)	90.14
Adjusted Level of Significance	0.0456	Adjusted Chi Square Value	89.57
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	389783	95% Adjusted Gamma UCL (use when n<50)	392241
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk Lognormal GOF Test	

5% Shapiro Wilk P Value	1.91E-05	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.119	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	10.84	Mean of logged Data	12.11
Maximum of Logged Data	14.39	SD of logged Data	0.959
Assuming Lognormal Distribution			
95% H-UCL	387892	90% Chebyshev (MVUE) UCL	413594
95% Chebyshev (MVUE) UCL	471994	97.5% Chebyshev (MVUE) UCL	553052
99% Chebyshev (MVUE) UCL	712274		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	394250	95% Jackknife UCL	395740
95% Standard Bootstrap UCL	394449	95% Bootstrap-t UCL	423685
95% Hall's Bootstrap UCL	408770	95% Percentile Bootstrap UCL	395773
95% BCA Bootstrap UCL	408477		
90% Chebyshev(Mean, Sd) UCL	464613	95% Chebyshev(Mean, Sd) UCL	535171
97.5% Chebyshev(Mean, Sd) UCL	633102	99% Chebyshev(Mean, Sd) UCL	825470
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	535171		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (cm 2+***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)

General Statistics			
Total Number of Observations	86	Number of Distinct Observations	85
		Number of Missing Observations	0
Minimum	1.011	Mean	10.65
Maximum	89.78	Median	7.625
SD	12.43	Std. Error of Mean	1.34
Coefficient of Variation	1.167	Skewness	3.794
Normal GOF Test			
Shapiro Wilk Test Statistic	0.646	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.241	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0957	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	12.88	95% Adjusted-CLT UCL (Chen-1995)	13.44
		95% Modified-t UCL (Johnson-1978)	12.97
Gamma GOF Test			
A-D Test Statistic	1.432	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.774	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.0985	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.373	k star (bias corrected MLE)	1.333
Theta hat (MLE)	7.758	Theta star (bias corrected MLE)	7.992
nu hat (MLE)	236.1	nu star (bias corrected)	229.2
MLE Mean (bias corrected)	10.65	MLE Sd (bias corrected)	9.226
		Approximate Chi Square Value (0.05)	195.2
Adjusted Level of Significance	0.0472	Adjusted Chi Square Value	194.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	12.51	95% Adjusted Gamma UCL (use when n<50)	12.54
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.984	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.752	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0603	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0957	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	0.0112	Mean of logged Data	1.959
Maximum of Logged Data	4.497	SD of logged Data	0.883
Assuming Lognormal Distribution			
95% H-UCL	12.84	90% Chebyshev (MVUE) UCL	13.84
95% Chebyshev (MVUE) UCL	15.4	97.5% Chebyshev (MVUE) UCL	17.56
99% Chebyshev (MVUE) UCL	21.8		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	12.85	95% Jackknife UCL	12.88
95% Standard Bootstrap UCL	12.85	95% Bootstrap-t UCL	13.84
95% Hall's Bootstrap UCL	14.77	95% Percentile Bootstrap UCL	12.82
95% BCA Bootstrap UCL	13.61		
90% Chebyshev(Mean, Sd) UCL	14.67	95% Chebyshev(Mean, Sd) UCL	16.49
97.5% Chebyshev(Mean, Sd) UCL	19.02	99% Chebyshev(Mean, Sd) UCL	23.98
Suggested UCL to Use			
95% H-UCL	12.84		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

RESULT_VALUE_MDL (dutch kills***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6****ng/kg)

General Statistics			
Total Number of Observations	25	Number of Distinct Observations	25
		Number of Missing Observations	0
Minimum	0.26	Mean	5.356
Maximum	16.2	Median	3.73
SD	4.303	Std. Error of Mean	0.861
Coefficient of Variation	0.803	Skewness	1.096
Normal GOF Test			
Shapiro Wilk Test Statistic	0.891	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.17	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.173	Data appear Normal at 5% Significance Level	
Data appear Approximate Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	6.829	95% Adjusted-CLT UCL (Chen-1995)	6.974
		95% Modified-t UCL (Johnson-1978)	6.86
Gamma GOF Test			
A-D Test Statistic	0.173	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.762	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0956	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.178	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.472	k star (bias corrected MLE)	1.322
Theta hat (MLE)	3.64	Theta star (bias corrected MLE)	4.052
nu hat (MLE)	73.59	nu star (bias corrected)	66.09
MLE Mean (bias corrected)	5.356	MLE Sd (bias corrected)	4.659
		Approximate Chi Square Value (0.05)	48.38
Adjusted Level of Significance	0.0395	Adjusted Chi Square Value	47.35
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	7.317	95% Adjusted Gamma UCL (use when n<50)	7.476
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.951	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.918	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.153	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.173	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-1.347	Mean of logged Data	1.302
Maximum of Logged Data	2.785	SD of logged Data	0.996
Assuming Lognormal Distribution			
95% H-UCL	10.01	90% Chebyshev (MVUE) UCL	9.851
95% Chebyshev (MVUE) UCL	11.65	97.5% Chebyshev (MVUE) UCL	14.16
99% Chebyshev (MVUE) UCL	19.08		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	6.772	95% Jackknife UCL	6.829
95% Standard Bootstrap UCL	6.72	95% Bootstrap-t UCL	7.117
95% Hall's Bootstrap UCL	6.979	95% Percentile Bootstrap UCL	6.712
95% BCA Bootstrap UCL	6.902		
90% Chebyshev(Mean, Sd) UCL	7.938	95% Chebyshev(Mean, Sd) UCL	9.108
97.5% Chebyshev(Mean, Sd) UCL	10.73	99% Chebyshev(Mean, Sd) UCL	13.92
Suggested UCL to Use			
95% Student's-t UCL	6.829		
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

RESULT_VALUE_MDL (dutch kills***copper***7440-50-8****mg/kg)

General Statistics			
Total Number of Observations	33	Number of Distinct Observations	32
		Number of Missing Observations	0
Minimum	105	Mean	383
Maximum	852	Median	357
SD	192.6	Std. Error of Mean	33.52
Coefficient of Variation	0.503	Skewness	0.646
Normal GOF Test			
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.139	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	439.8	95% Adjusted-CLT UCL (Chen-1995)	442.2
		95% Modified-t UCL (Johnson-1978)	440.4
Gamma GOF Test			
A-D Test Statistic	0.294	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.751	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0981	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.154	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.956	k star (bias corrected MLE)	3.616
Theta hat (MLE)	96.83	Theta star (bias corrected MLE)	105.9
nu hat (MLE)	261.1	nu star (bias corrected)	238.7
MLE Mean (bias corrected)	383	MLE Sd (bias corrected)	201.4
		Approximate Chi Square Value (0.05)	203.9
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	202.3

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	448.3	95% Adjusted Gamma UCL (use when n<50)	452
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.965	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.132	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.152	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.654	Mean of logged Data	5.816
Maximum of Logged Data	6.748	SD of logged Data	0.539
Assuming Lognormal Distribution			
95% H-UCL	468.4	90% Chebyshev (MVUE) UCL	500.9
95% Chebyshev (MVUE) UCL	552.8	97.5% Chebyshev (MVUE) UCL	624.8
99% Chebyshev (MVUE) UCL	766.3		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	438.2	95% Jackknife UCL	439.8
95% Standard Bootstrap UCL	437.1	95% Bootstrap-t UCL	445.7
95% Hall's Bootstrap UCL	445.3	95% Percentile Bootstrap UCL	437.1
95% BCA Bootstrap UCL	444.3		
90% Chebyshev(Mean, Sd) UCL	483.6	95% Chebyshev(Mean, Sd) UCL	529.1
97.5% Chebyshev(Mean, Sd) UCL	592.4	99% Chebyshev(Mean, Sd) UCL	716.5
Suggested UCL to Use			
95% Student's-t UCL	439.8		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (dutch kills***cyanide***57-12-5****mg/kg)			
General Statistics			
Total Number of Observations	33	Number of Distinct Observations	23
Number of Detects	11	Number of Non-Detects	22
Number of Distinct Detects	9	Number of Distinct Non-Detects	16
Minimum Detect	0.47	Minimum Non-Detect	0.36
Maximum Detect	4.9	Maximum Non-Detect	1.6
Variance Detects	1.531	Percent Non-Detects	66.67%
Mean Detects	1.383	SD Detects	1.237
Median Detects	1.2	CV Detects	0.895
Skewness Detects	2.688	Kurtosis Detects	7.936
Mean of Logged Detects	0.0972	SD of Logged Detects	0.644
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.65	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.345	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.251	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.766	KM Standard Error of Mean	0.152
KM SD	0.817	95% KM (BCA) UCL	1.072
95% KM (t) UCL	1.024	95% KM (Percentile Bootstrap) UCL	1.028
95% KM (z) UCL	1.017	95% KM Bootstrap t UCL	1.261
90% KM Chebyshev UCL	1.223	95% KM Chebyshev UCL	1.43
97.5% KM Chebyshev UCL	1.718	99% KM Chebyshev UCL	2.282
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.714	Anderson-Darling GOF Test	
5% A-D Critical Value	0.737	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.268	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.258	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.357	k star (bias corrected MLE)	1.775
Theta hat (MLE)	0.587	Theta star (bias corrected MLE)	0.779
nu hat (MLE)	51.86	nu star (bias corrected)	39.05
Mean (detects)	1.383		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.475
Maximum	4.9	Median	0.01
SD	0.951	CV	2.003
k hat (MLE)	0.33	k star (bias corrected MLE)	0.32
Theta hat (MLE)	1.44	Theta star (bias corrected MLE)	1.484
nu hat (MLE)	21.75	nu star (bias corrected)	21.11
Adjusted Level of Significance (β)	0.0419		
Approximate Chi Square Value (21.11, α)	11.67	Adjusted Chi Square Value (21.11, β)	11.31
95% Gamma Approximate UCL (use when n>=50)	0.858	95% Gamma Adjusted UCL (use when n<50)	0.886
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.766	SD (KM)	0.817
Variance (KM)	0.667	SE of Mean (KM)	0.152
k hat (KM)	0.88	k star (KM)	0.82
nu hat (KM)	58.08	nu star (KM)	54.13
theta hat (KM)	0.871	theta star (KM)	0.934
80% gamma percentile (KM)	1.25	90% gamma percentile (KM)	1.852
95% gamma percentile (KM)	2.463	99% gamma percentile (KM)	3.905
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (54.13, α)	38.23	Adjusted Chi Square Value (54.13, β)	37.54
95% Gamma Approximate KM-UCL (use when n>=50)	1.085	95% Gamma Adjusted KM-UCL (use when n<50)	1.105
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.911	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.217	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.251	Detected Data appear Lognormal at 5% Significance Level	

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.671	Mean in Log Scale	-0.77
SD in Original Scale	0.864	SD in Log Scale	0.765
95% t UCL (assumes normality of ROS data)	0.926	95% Percentile Bootstrap UCL	0.939
95% BCA Bootstrap UCL	1.077	95% Bootstrap t UCL	1.196
95% H-UCL (Log ROS)	0.833		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.513	KM Geo Mean	0.599
KM SD (logged)	0.598	95% Critical H Value (KM-Log)	2.017
KM Standard Error of Mean (logged)	0.126	95% H-UCL (KM -Log)	0.886
KM SD (logged)	0.598	95% Critical H Value (KM-Log)	2.017
KM Standard Error of Mean (logged)	0.126		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.728	Mean in Log Scale	-0.616
SD in Original Scale	0.844	SD in Log Scale	0.688
95% t UCL (Assumes normality)	0.977	95% H-Stat UCL	0.884
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM Adjusted Gamma UCL	1.105	95% GROS Adjusted Gamma UCL	0.886

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (dutch kills***lead***7439-92-1***t***mg/kg)

General Statistics			
Total Number of Observations	33	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	123	Mean	441.8
Maximum	1170	Median	403
SD	252.3	Std. Error of Mean	43.93
Coefficient of Variation	0.571	Skewness	1.003

Normal GOF Test			
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	516.2	95% Adjusted-CLT UCL (Chen-1995)	522.2
		95% Modified-t UCL (Johnson-1978)	517.5

Gamma GOF Test			
A-D Test Statistic	0.283	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.11	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.154	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	3.333	k star (bias corrected MLE)	3.051
Theta hat (MLE)	132.5	Theta star (bias corrected MLE)	144.8
nu hat (MLE)	220	nu star (bias corrected)	201.3
MLE Mean (bias corrected)	441.8	MLE Sd (bias corrected)	252.9
		Approximate Chi Square Value (0.05)	169.5
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	168

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	524.7	95% Adjusted Gamma UCL (use when n<50)	529.4

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.973	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0776	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.152	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	4.812	Mean of logged Data	5.933
Maximum of Logged Data	7.065	SD of logged Data	0.58

Assuming Lognormal Distribution			
95% H-UCL	548.2	90% Chebyshev (MVUE) UCL	586.4
95% Chebyshev (MVUE) UCL	650.9	97.5% Chebyshev (MVUE) UCL	740.5
99% Chebyshev (MVUE) UCL	916.4		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs			
95% CLT UCL	514	95% Jackknife UCL	516.2
95% Standard Bootstrap UCL	512.5	95% Bootstrap-t UCL	527.3
95% Hall's Bootstrap UCL	524.8	95% Percentile Bootstrap UCL	514.9
95% BCA Bootstrap UCL	521.3		
90% Chebyshev(Mean, Sd) UCL	573.6	95% Chebyshev(Mean, Sd) UCL	633.3
97.5% Chebyshev(Mean, Sd) UCL	716.1	99% Chebyshev(Mean, Sd) UCL	878.8

Suggested UCL to Use			
95% Adjusted Gamma UCL	529.4		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (dutch kills***total dioxin/furan teq 1998 (fish)***tdioxfurf***t***ng/kg)

General Statistics			
Total Number of Observations	25	Number of Distinct Observations	25
		Number of Missing Observations	0
Minimum	5.471	Mean	115.1
Maximum	512.5	Median	92.8
SD	110.4	Std. Error of Mean	22.07
Coefficient of Variation	0.958	Skewness	2.218
Normal GOF Test			
Shapiro Wilk Test Statistic	0.778	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.245	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.173	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	152.9	95% Adjusted-CLT UCL (Chen-1995)	161.9
		95% Modified-t UCL (Johnson-1978)	154.5
Gamma GOF Test			
A-D Test Statistic	0.28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.764	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.135	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.178	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.384	k star (bias corrected MLE)	1.245
Theta hat (MLE)	83.19	Theta star (bias corrected MLE)	92.51
nu hat (MLE)	69.2	nu star (bias corrected)	62.23
MLE Mean (bias corrected)	115.1	MLE Sd (bias corrected)	103.2
		Approximate Chi Square Value (0.05)	45.09
Adjusted Level of Significance	0.0395	Adjusted Chi Square Value	44.09
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	158.9	95% Adjusted Gamma UCL (use when n<50)	162.5
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.968	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.918	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.133	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.173	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.7	Mean of logged Data	4.343
Maximum of Logged Data	6.239	SD of logged Data	0.987
Assuming Lognormal Distribution			
95% H-UCL	206.4	90% Chebyshev (MVUE) UCL	203.7
95% Chebyshev (MVUE) UCL	240.8	97.5% Chebyshev (MVUE) UCL	292.2
99% Chebyshev (MVUE) UCL	393.2		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	151.4	95% Jackknife UCL	152.9
95% Standard Bootstrap UCL	150.2	95% Bootstrap-t UCL	172.1
95% Hall's Bootstrap UCL	199.4	95% Percentile Bootstrap UCL	152.2
95% BCA Bootstrap UCL	163.4		
90% Chebyshev(Mean, Sd) UCL	181.3	95% Chebyshev(Mean, Sd) UCL	211.3
97.5% Chebyshev(Mean, Sd) UCL	253	99% Chebyshev(Mean, Sd) UCL	334.7
Suggested UCL to Use			
95% Adjusted Gamma UCL	162.5		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

RESULT_VALUE_MDL (dutch kills***total pah (17)****tpah_17*****ug/kg)

General Statistics			
Total Number of Observations	33	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	12456	Mean	55318
Maximum	127350	Median	54833
SD	28196	Std. Error of Mean	4908
Coefficient of Variation	0.51	Skewness	0.663
Normal GOF Test			
Shapiro Wilk Test Statistic	0.945	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.11	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	63632	95% Adjusted-CLT UCL (Chen-1995)	63996
		95% Modified-t UCL (Johnson-1978)	63726
Gamma GOF Test			
A-D Test Statistic	0.529	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.752	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.157	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.154	Data Not Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.523	k star (bias corrected MLE)	3.223
Theta hat (MLE)	15702	Theta star (bias corrected MLE)	17164
nu hat (MLE)	232.5	nu star (bias corrected)	212.7
MLE Mean (bias corrected)	55318	MLE Sd (bias corrected)	30813
		Approximate Chi Square Value (0.05)	180
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	178.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	65385	95% Adjusted Gamma UCL (use when n<50)	65953

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.93	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.187	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	9.43	Mean of logged Data	10.77
Maximum of Logged Data	11.75	SD of logged Data	0.594
Assuming Lognormal Distribution			
95% H-UCL	70280	90% Chebyshev (MVUE) UCL	75171
95% Chebyshev (MVUE) UCL	83614	97.5% Chebyshev (MVUE) UCL	95332
99% Chebyshev (MVUE) UCL	118350		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	63391	95% Jackknife UCL	63632
95% Standard Bootstrap UCL	63244	95% Bootstrap-t UCL	64262
95% Hall's Bootstrap UCL	64783	95% Percentile Bootstrap UCL	63720
95% BCA Bootstrap UCL	63692		
90% Chebyshev(Mean, Sd) UCL	70043	95% Chebyshev(Mean, Sd) UCL	76713
97.5% Chebyshev(Mean, Sd) UCL	85970	99% Chebyshev(Mean, Sd) UCL	104155
Suggested UCL to Use			
95% Student's-t UCL	63632		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (dutch kills***total pah (34)***tpah_34_nc***t***ug/kg)			
General Statistics			
Total Number of Observations	33	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	18184	Mean	115234
Maximum	347580	Median	93542
SD	75801	Std. Error of Mean	13195
Coefficient of Variation	0.658	Skewness	1.411
Normal GOF Test			
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.171	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	137586	95% Adjusted-CLT UCL (Chen-1995)	140401
		95% Modified-t UCL (Johnson-1978)	138126
Gamma GOF Test			
A-D Test Statistic	0.333	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.756	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.117	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.155	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.523	k star (bias corrected MLE)	2.314
Theta hat (MLE)	45669	Theta star (bias corrected MLE)	49798
nu hat (MLE)	166.5	nu star (bias corrected)	152.7
MLE Mean (bias corrected)	115234	MLE Sd (bias corrected)	75752
		Approximate Chi Square Value (0.05)	125.2
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	123.9
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	140615	95% Adjusted Gamma UCL (use when n<50)	142071
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.961	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.155	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	9.808	Mean of logged Data	11.44
Maximum of Logged Data	12.76	SD of logged Data	0.694
Assuming Lognormal Distribution			
95% H-UCL	153812	90% Chebyshev (MVUE) UCL	163938
95% Chebyshev (MVUE) UCL	184881	97.5% Chebyshev (MVUE) UCL	213950
99% Chebyshev (MVUE) UCL	271049		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	136939	95% Jackknife UCL	137586
95% Standard Bootstrap UCL	136675	95% Bootstrap-t UCL	143171
95% Hall's Bootstrap UCL	141843	95% Percentile Bootstrap UCL	138273
95% BCA Bootstrap UCL	139933		
90% Chebyshev(Mean, Sd) UCL	154820	95% Chebyshev(Mean, Sd) UCL	172751
97.5% Chebyshev(Mean, Sd) UCL	197639	99% Chebyshev(Mean, Sd) UCL	246526
Suggested UCL to Use			
95% Adjusted Gamma UCL	142071		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (dutch kills***total pah (34)***tpah_34_nc***t***ug/kg)			
General Statistics			

Total Number of Observations	33	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	0.2	Mean	14.61
Maximum	375.5	Median	2.289
SD	64.86	Std. Error of Mean	11.29
Coefficient of Variation	4.439	Skewness	5.724
Normal GOF Test			
Shapiro Wilk Test Statistic	0.211	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.489	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	33.74	95% Adjusted-CLT UCL (Chen-1995)	45.21
		95% Modified-t UCL (Johnson-1978)	35.61
Gamma GOF Test			
A-D Test Statistic	5.418	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.838	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.325	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.165	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.38	k star (bias corrected MLE)	0.366
Theta hat (MLE)	38.42	Theta star (bias corrected MLE)	39.93
nu hat (MLE)	25.1	nu star (bias corrected)	24.15
MLE Mean (bias corrected)	14.61	MLE Sd (bias corrected)	24.16
		Approximate Chi Square Value (0.05)	13.97
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	13.57
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	25.27	95% Adjusted Gamma UCL (use when n<50)	26.02
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.891	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.125	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.152	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-1.61	Mean of logged Data	0.938
Maximum of Logged Data	5.928	SD of logged Data	1.312
Assuming Lognormal Distribution			
95% H-UCL	11.67	90% Chebyshev (MVUE) UCL	10.64
95% Chebyshev (MVUE) UCL	12.84	97.5% Chebyshev (MVUE) UCL	15.9
99% Chebyshev (MVUE) UCL	21.92		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	33.18	95% Jackknife UCL	33.74
95% Standard Bootstrap UCL	32.41	95% Bootstrap-t UCL	317.4
95% Hall's Bootstrap UCL	134.7	95% Percentile Bootstrap UCL	37.15
95% BCA Bootstrap UCL	48.95		
90% Chebyshev(Mean, Sd) UCL	48.48	95% Chebyshev(Mean, Sd) UCL	63.83
97.5% Chebyshev(Mean, Sd) UCL	85.12	99% Chebyshev(Mean, Sd) UCL	127
Suggested UCL to Use			
95% H-UCL	11.67		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_VALUE_MDL (east branch***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6****ng/kg)			
General Statistics			
Total Number of Observations	25	Number of Distinct Observations	25
Number of Detects	23	Number of Non-Detects	2
Number of Distinct Detects	23	Number of Distinct Non-Detects	2
Minimum Detect	0.151	Minimum Non-Detect	1.31
Maximum Detect	14	Maximum Non-Detect	1.97
Variance Detects	8.087	Percent Non-Detects	8%
Mean Detects	3.313	SD Detects	2.844
Median Detects	2.49	CV Detects	0.858
Skewness Detects	2.732	Kurtosis Detects	9.135
Mean of Logged Detects	0.909	SD of Logged Detects	0.857
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.711	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.24	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.18	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	3.125	KM Standard Error of Mean	0.563
KM SD	2.746	95% KM (BCA) UCL	4.138
95% KM (t) UCL	4.088	95% KM (Percentile Bootstrap) UCL	4.092
95% KM (z) UCL	4.051	95% KM Bootstrap t UCL	4.86
90% KM Chebyshev UCL	4.814	95% KM Chebyshev UCL	5.578
97.5% KM Chebyshev UCL	6.64	99% KM Chebyshev UCL	8.725
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.75	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.166	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.184	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.879	k star (bias corrected MLE)	1.663

Theta hat (MLE)	1.763	Theta star (bias corrected MLE)	1.992
nu hat (MLE)	86.42	nu star (bias corrected)	76.48
Mean (detects)	3.313		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.151	Mean	3.075
Maximum	14	Median	2.28
SD	2.844	CV	0.925
k hat (MLE)	1.479	k star (bias corrected MLE)	1.328
Theta hat (MLE)	2.079	Theta star (bias corrected MLE)	2.315
nu hat (MLE)	73.95	nu star (bias corrected)	66.41
Adjusted Level of Significance (β)	0.0395		
Approximate Chi Square Value (66.41, α)	48.66	Adjusted Chi Square Value (66.41, β)	47.62
95% Gamma Approximate UCL (use when n>=50)	4.197	95% Gamma Adjusted UCL (use when n<50)	4.288
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	3.125	SD (KM)	2.746
Variance (KM)	7.542	SE of Mean (KM)	0.563
k hat (KM)	1.295	k star (KM)	1.166
nu hat (KM)	64.76	nu star (KM)	58.32
theta hat (KM)	2.413	theta star (KM)	2.679
80% gamma percentile (KM)	4.962	90% gamma percentile (KM)	6.928
95% gamma percentile (KM)	8.871	99% gamma percentile (KM)	13.33
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (58.32, α)	41.77	Adjusted Chi Square Value (58.32, β)	40.81
95% Gamma Approximate KM-UCL (use when n>=50)	4.364	95% Gamma Adjusted KM-UCL (use when n<50)	4.467
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.879	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.215	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.18	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.113	Mean in Log Scale	0.82
SD in Original Scale	2.809	SD in Log Scale	0.876
95% t UCL (assumes normality of ROS data)	4.074	95% Percentile Bootstrap UCL	4.105
95% BCA Bootstrap UCL	4.472	95% Bootstrap t UCL	4.882
95% H-UCL (Log ROS)	5.064		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	0.811	KM Geo Mean	2.25
KM SD (logged)	0.905	95% Critical H Value (KM-Log)	2.377
KM Standard Error of Mean (logged)	0.195	95% H-UCL (KM -Log)	5.259
KM SD (logged)	0.905	95% Critical H Value (KM-Log)	2.377
KM Standard Error of Mean (logged)	0.195		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	3.113	Mean in Log Scale	0.818
SD in Original Scale	2.809	SD in Log Scale	0.88
95% t UCL (Assumes normality)	4.074	95% H-Stat UCL	5.088
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM Adjusted Gamma UCL	4.467	95% GROS Adjusted Gamma UCL	4.288
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (east branch***copper***7440-50-8***t***mg/kg)			
General Statistics			
Total Number of Observations	33	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	32	Mean	569.2
Maximum	6320	Median	313
SD	1072	Std. Error of Mean	186.5
Coefficient of Variation	1.883	Skewness	5.134
Normal GOF Test			
Shapiro Wilk Test Statistic	0.384	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.347	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	885.2	95% Adjusted-CLT UCL (Chen-1995)	1054
		95% Modified-t UCL (Johnson-1978)	913
Gamma GOF Test			
A-D Test Statistic	1.948	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.775	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.202	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.158	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.04	k star (bias corrected MLE)	0.966
Theta hat (MLE)	547.4	Theta star (bias corrected MLE)	589.5
nu hat (MLE)	68.63	nu star (bias corrected)	63.72
MLE Mean (bias corrected)	569.2	MLE Sd (bias corrected)	579.3
		Approximate Chi Square Value (0.05)	46.36
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	45.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	782.4	95% Adjusted Gamma UCL (use when n<50)	795.5
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.948	Shapiro Wilk Lognormal GOF Test	

5% Shapiro Wilk Critical Value	0.931	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.139	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.152	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.466	Mean of logged Data	5.792
Maximum of Logged Data	8.751	SD of logged Data	0.948
Assuming Lognormal Distribution			
95% H-UCL	765.2	90% Chebyshev (MVUE) UCL	788.7
95% Chebyshev (MVUE) UCL	917.8	97.5% Chebyshev (MVUE) UCL	1097
99% Chebyshev (MVUE) UCL	1449		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	876	95% Jackknife UCL	885.2
95% Standard Bootstrap UCL	866	95% Bootstrap-t UCL	1754
95% Hall's Bootstrap UCL	1993	95% Percentile Bootstrap UCL	915.5
95% BCA Bootstrap UCL	1221		
90% Chebyshev(Mean, Sd) UCL	1129	95% Chebyshev(Mean, Sd) UCL	1382
97.5% Chebyshev(Mean, Sd) UCL	1734	99% Chebyshev(Mean, Sd) UCL	2425
Suggested UCL to Use			
95% H-UCL	765.2		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_VALUE_MDL (east branch***cyanide***57-12-5***mg/kg)			
General Statistics			
Total Number of Observations	33	Number of Distinct Observations	22
Number of Detects	3	Number of Non-Detects	30
Number of Distinct Detects	3	Number of Distinct Non-Detects	21
Minimum Detect	0.79	Minimum Non-Detect	0.29
Maximum Detect	1.7	Maximum Non-Detect	2.3
Variance Detects	0.214	Percent Non-Detects	90.91%
Mean Detects	1.197	SD Detects	0.463
Median Detects	1.1	CV Detects	0.387
Skewness Detects	0.899	Kurtosis Detects	N/A
Mean of Logged Detects	0.13	SD of Logged Detects	0.384
Warning: Data set has only 3 Detected Values. This is not enough to compute meaningful or reliable statistics and estimates.			
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.967	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.249	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.473	KM Standard Error of Mean	0.121
KM SD	0.337	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.678	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.672	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.836	95% KM Chebyshev UCL	1.001
97.5% KM Chebyshev UCL	1.23	99% KM Chebyshev UCL	1.679
Gamma GOF Tests on Detected Observations Only			
Not Enough Data to Perform GOF Test			
Gamma Statistics on Detected Data Only			
k hat (MLE)	10.27	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.117	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	61.63	nu star (bias corrected)	N/A
Mean (detects)	1.197		
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)			
For such situations, GROS method may yield incorrect values of UCLs and BTVs			
This is especially true when the sample size is small.			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.258
Maximum	1.7	Median	0.126
SD	0.362	CV	1.405
k hat (MLE)	0.62	k star (bias corrected MLE)	0.584
Theta hat (MLE)	0.416	Theta star (bias corrected MLE)	0.442
nu hat (MLE)	40.92	nu star (bias corrected)	38.54
Adjusted Level of Significance (β)	0.0419		
Approximate Chi Square Value (38.54, α)	25.32	Adjusted Chi Square Value (38.54, β)	24.77
95% Gamma Approximate UCL (use when n>=50)	0.393	95% Gamma Adjusted UCL (use when n<50)	N/A
Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.473	SD (KM)	0.337
Variance (KM)	0.114	SE of Mean (KM)	0.121
k hat (KM)	1.966	k star (KM)	1.807
nu hat (KM)	129.7	nu star (KM)	119.3
theta hat (KM)	0.24	theta star (KM)	0.262
80% gamma percentile (KM)	0.716	90% gamma percentile (KM)	0.942
95% gamma percentile (KM)	1.158	99% gamma percentile (KM)	1.641
Gamma Kaplan-Meier (KM) Statistics			
Approximate Chi Square Value (119.28, α)	95.07	Adjusted Chi Square Value (119.28, β)	93.95
95% Gamma Approximate KM-UCL (use when n>=50)	0.593	95% Gamma Adjusted KM-UCL (use when n<50)	0.6
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.994	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.767	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.203	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.425	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.491	Mean in Log Scale	-0.801
SD in Original Scale	0.273	SD in Log Scale	0.387
95% t UCL (assumes normality of ROS data)	0.572	95% Percentile Bootstrap UCL	0.572
95% BCA Bootstrap UCL	0.599	95% Bootstrap t UCL	0.634
95% H-UCL (Log ROS)	0.549		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.922	KM Geo Mean	0.398
KM SD (logged)	0.534	95% Critical H Value (KM-Log)	1.963
KM Standard Error of Mean (logged)	0.222	95% H-UCL (KM -Log)	0.552
KM SD (logged)	0.534	95% Critical H Value (KM-Log)	1.963
KM Standard Error of Mean (logged)	0.222		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.633	Mean in Log Scale	-0.558
SD in Original Scale	0.294	SD in Log Scale	0.47
95% t UCL (Assumes normality)	0.719	95% H-Stat UCL	0.75
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.678		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (east branch***lead***7439-92-1***t***mg/kg)

General Statistics			
Total Number of Observations	33	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	38.5	Mean	408.5
Maximum	1080	Median	378
SD	204.8	Std. Error of Mean	35.64
Coefficient of Variation	0.501	Skewness	0.962
Normal GOF Test			
Shapiro Wilk Test Statistic	0.919	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.157	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	468.9	95% Adjusted-CLT UCL (Chen-1995)	473.5
		95% Modified-t UCL (Johnson-1978)	469.9
Gamma GOF Test			
A-D Test Statistic	1.395	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.753	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.218	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.154	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.192	k star (bias corrected MLE)	2.922
Theta hat (MLE)	128	Theta star (bias corrected MLE)	139.8
nu hat (MLE)	210.6	nu star (bias corrected)	192.8
MLE Mean (bias corrected)	408.5	MLE Sd (bias corrected)	239
		Approximate Chi Square Value (0.05)	161.7
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	160.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	487.1	95% Adjusted Gamma UCL (use when n<50)	491.6
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.83	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.259	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.651	Mean of logged Data	5.848
Maximum of Logged Data	6.985	SD of logged Data	0.677
Assuming Lognormal Distribution			
95% H-UCL	559.4	90% Chebyshev (MVUE) UCL	596.8
95% Chebyshev (MVUE) UCL	671.5	97.5% Chebyshev (MVUE) UCL	775.1
99% Chebyshev (MVUE) UCL	978.7		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	467.1	95% Jackknife UCL	468.9
95% Standard Bootstrap UCL	467.3	95% Bootstrap-t UCL	477
95% Hall's Bootstrap UCL	481.9	95% Percentile Bootstrap UCL	466.1
95% BCA Bootstrap UCL	473.8		
90% Chebyshev(Mean, Sd) UCL	515.4	95% Chebyshev(Mean, Sd) UCL	563.9
97.5% Chebyshev(Mean, Sd) UCL	631.1	99% Chebyshev(Mean, Sd) UCL	763.1
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	563.9		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (east branch***total dioxin/furan teq 1998 (fish)***dioxfurf***t***ng/kg)

General Statistics			
Total Number of Observations	25	Number of Distinct Observations	25
		Number of Missing Observations	0

Minimum	3.436	Mean	79.31
Maximum	286.4	Median	68.31
SD	55.03	Std. Error of Mean	11.01
Coefficient of Variation	0.694	Skewness	2.343
Normal GOF Test			
Shapiro Wilk Test Statistic	0.798	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.173	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.173	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	98.14	95% Adjusted-CLT UCL (Chen-1995)	102.9
		95% Modified-t UCL (Johnson-1978)	99
Gamma GOF Test			
A-D Test Statistic	0.585	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.755	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.131	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.176	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.311	k star (bias corrected MLE)	2.06
Theta hat (MLE)	34.32	Theta star (bias corrected MLE)	38.49
nu hat (MLE)	115.5	nu star (bias corrected)	103
MLE Mean (bias corrected)	79.31	MLE Sd (bias corrected)	55.25
		Approximate Chi Square Value (0.05)	80.59
Adjusted Level of Significance	0.0395	Adjusted Chi Square Value	79.24
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	101.4	95% Adjusted Gamma UCL (use when n<50)	103.1
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.847	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.918	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.182	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.173	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.234	Mean of logged Data	4.142
Maximum of Logged Data	5.657	SD of logged Data	0.805
Assuming Lognormal Distribution			
95% H-UCL	126	90% Chebyshev (MVUE) UCL	130.8
95% Chebyshev (MVUE) UCL	151.2	97.5% Chebyshev (MVUE) UCL	179.7
99% Chebyshev (MVUE) UCL	235.6		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	97.41	95% Jackknife UCL	98.14
95% Standard Bootstrap UCL	96.58	95% Bootstrap-t UCL	108.4
95% Hall's Bootstrap UCL	193	95% Percentile Bootstrap UCL	98.07
95% BCA Bootstrap UCL	103		
90% Chebyshev(Mean, Sd) UCL	112.3	95% Chebyshev(Mean, Sd) UCL	127.3
97.5% Chebyshev(Mean, Sd) UCL	148	99% Chebyshev(Mean, Sd) UCL	188.8
Suggested UCL to Use			
95% Adjusted Gamma UCL	103.1		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

RESULT_VALUE_MDL (east branch***total pah (17)***tpah_17***t***ug/kg)

General Statistics			
Total Number of Observations	33	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	6306	Mean	64923
Maximum	369924	Median	49041
SD	61763	Std. Error of Mean	10752
Coefficient of Variation	0.951	Skewness	3.967
Normal GOF Test			
Shapiro Wilk Test Statistic	0.601	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.213	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	83135	95% Adjusted-CLT UCL (Chen-1995)	90541
		95% Modified-t UCL (Johnson-1978)	84372
Gamma GOF Test			
A-D Test Statistic	0.958	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.129	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.155	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.098	k star (bias corrected MLE)	1.928
Theta hat (MLE)	30944	Theta star (bias corrected MLE)	33682
nu hat (MLE)	138.5	nu star (bias corrected)	127.2
MLE Mean (bias corrected)	64923	MLE Sd (bias corrected)	46762
		Approximate Chi Square Value (0.05)	102.2
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	101
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	80843	95% Adjusted Gamma UCL (use when n<50)	81767
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.127	Lilliefors Lognormal GOF Test	

5% Lilliefors Critical Value		0.152 Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	8.749	Mean of logged Data	10.82
Maximum of Logged Data	12.82	SD of logged Data	0.723
Assuming Lognormal Distribution			
95% H-UCL	85665	90% Chebyshev (MVUE) UCL	91128
95% Chebyshev (MVUE) UCL	103156	97.5% Chebyshev (MVUE) UCL	119851
99% Chebyshev (MVUE) UCL	152643		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	82608	95% Jackknife UCL	83135
95% Standard Bootstrap UCL	82024	95% Bootstrap-t UCL	99847
95% Hall's Bootstrap UCL	157918	95% Percentile Bootstrap UCL	83140
95% BCA Bootstrap UCL	90425		
90% Chebyshev(Mean, Sd) UCL	97178	95% Chebyshev(Mean, Sd) UCL	111788
97.5% Chebyshev(Mean, Sd) UCL	132066	99% Chebyshev(Mean, Sd) UCL	171900
Suggested UCL to Use			
95% Adjusted Gamma UCL	81767		
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (east branch***total pah (34)***tpah_34_nc***t**ug/kg)			
General Statistics			
Total Number of Observations	33	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	9746	Mean	139547
Maximum	685194	Median	85902
SD	135127	Std. Error of Mean	23523
Coefficient of Variation	0.968	Skewness	2.43
Normal GOF Test			
Shapiro Wilk Test Statistic	0.727	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.282	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	179392	95% Adjusted-CLT UCL (Chen-1995)	188871
		95% Modified-t UCL (Johnson-1978)	181050
Gamma GOF Test			
A-D Test Statistic	1.284	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.764	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.201	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.156	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.585	k star (bias corrected MLE)	1.461
Theta hat (MLE)	88024	Theta star (bias corrected MLE)	95487
nu hat (MLE)	104.6	nu star (bias corrected)	96.45
MLE Mean (bias corrected)	139547	MLE Sd (bias corrected)	115434
		Approximate Chi Square Value (0.05)	74.8
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	73.82
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	179944	95% Adjusted Gamma UCL (use when n<50)	182336
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.144	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.152	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	9.185	Mean of logged Data	11.5
Maximum of Logged Data	13.44	SD of logged Data	0.855
Assuming Lognormal Distribution			
95% H-UCL	200486	90% Chebyshev (MVUE) UCL	210125
95% Chebyshev (MVUE) UCL	241858	97.5% Chebyshev (MVUE) UCL	285902
99% Chebyshev (MVUE) UCL	372419		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	178239	95% Jackknife UCL	179392
95% Standard Bootstrap UCL	176821	95% Bootstrap-t UCL	196732
95% Hall's Bootstrap UCL	211273	95% Percentile Bootstrap UCL	181543
95% BCA Bootstrap UCL	191449		
90% Chebyshev(Mean, Sd) UCL	210115	95% Chebyshev(Mean, Sd) UCL	242080
97.5% Chebyshev(Mean, Sd) UCL	286446	99% Chebyshev(Mean, Sd) UCL	373595
Suggested UCL to Use			
95% H-UCL	200486		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only.			
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.			
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.			
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			

RESULT_VALUE_MDL (east branch***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)

General Statistics			
Total Number of Observations	33	Number of Distinct Observations	33
		Number of Missing Observations	0
Minimum	0.0242	Mean	2.216
Maximum	11.55	Median	1.293
SD	2.809	Std. Error of Mean	0.489
Coefficient of Variation	1.268	Skewness	2.279
Normal GOF Test			
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.288	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.152	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3.044	95% Adjusted-CLT UCL (Chen-1995)	3.227
		95% Modified-t UCL (Johnson-1978)	3.076
Gamma GOF Test			
A-D Test Statistic	1.054	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.778	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.151	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.158	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.959	k star (bias corrected MLE)	0.892
Theta hat (MLE)	2.31	Theta star (bias corrected MLE)	2.484
nu hat (MLE)	63.3	nu star (bias corrected)	58.88
MLE Mean (bias corrected)	2.216	MLE Sd (bias corrected)	2.346
		Approximate Chi Square Value (0.05)	42.23
Adjusted Level of Significance	0.0419	Adjusted Chi Square Value	41.51
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	3.089	95% Adjusted Gamma UCL (use when n<50)	3.143
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.942	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.931	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.112	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.152	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-3.72	Mean of logged Data	0.191
Maximum of Logged Data	2.447	SD of logged Data	1.197
Assuming Lognormal Distribution			
95% H-UCL	4.37	90% Chebyshev (MVUE) UCL	4.188
95% Chebyshev (MVUE) UCL	5.002	97.5% Chebyshev (MVUE) UCL	6.133
99% Chebyshev (MVUE) UCL	8.353		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3.02	95% Jackknife UCL	3.044
95% Standard Bootstrap UCL	3.013	95% Bootstrap-t UCL	3.541
95% Hall's Bootstrap UCL	3.162	95% Percentile Bootstrap UCL	3.044
95% BCA Bootstrap UCL	3.339		
90% Chebyshev(Mean, Sd) UCL	3.683	95% Chebyshev(Mean, Sd) UCL	4.347
97.5% Chebyshev(Mean, Sd) UCL	5.27	99% Chebyshev(Mean, Sd) UCL	7.081
Suggested UCL to Use			
95% Adjusted Gamma UCL	3.143		

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (english kills***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)

General Statistics			
Total Number of Observations	56	Number of Distinct Observations	52
Number of Detects	54	Number of Non-Detects	2
Number of Distinct Detects	50	Number of Distinct Non-Detects	2
Minimum Detect	1.45	Minimum Non-Detect	1.11
Maximum Detect	25.8	Maximum Non-Detect	2.21
Variance Detects	28.88	Percent Non-Detects	3.57%
Mean Detects	8.412	SD Detects	5.374
Median Detects	7.245	CV Detects	0.639
Skewness Detects	1.308	Kurtosis Detects	1.722
Mean of Logged Detects	1.934	SD of Logged Detects	0.653
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.887	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	2.81E-05	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.14	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.12	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	8.157	KM Standard Error of Mean	0.728
KM SD	5.395	95% KM (BCA) UCL	9.519
95% KM (t) UCL	9.374	95% KM (Percentile Bootstrap) UCL	9.393
95% KM (z) UCL	9.354	95% KM Bootstrap t UCL	9.593
90% KM Chebyshev UCL	10.34	95% KM Chebyshev UCL	11.33
97.5% KM Chebyshev UCL	12.7	99% KM Chebyshev UCL	15.4
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.318	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0866	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.122	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	2.708 k star (bias corrected MLE)	2.57
Theta hat (MLE)	3.106 Theta star (bias corrected MLE)	3.273
nu hat (MLE)	292.5 nu star (bias corrected)	277.6
Mean (detects)	8.412	
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)		
For such situations, GROS method may yield incorrect values of UCLs and BTVs		
This is especially true when the sample size is small.		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	8.128
Maximum	25.8 Median	6.575
SD	5.483 CV	0.675
k hat (MLE)	1.738 k star (bias corrected MLE)	1.656
Theta hat (MLE)	4.678 Theta star (bias corrected MLE)	4.907
nu hat (MLE)	194.6 nu star (bias corrected)	185.5
Adjusted Level of Significance (β)	0.0457	
Approximate Chi Square Value (185.52, α)	155 Adjusted Chi Square Value (185.52, β)	154.3
95% Gamma Approximate UCL (use when n>=50)	9.728 95% Gamma Adjusted UCL (use when n<50)	9.774
Estimates of Gamma Parameters using KM Estimates		
Mean (KM)	8.157 SD (KM)	5.395
Variance (KM)	29.1 SE of Mean (KM)	0.728
k hat (KM)	2.286 k star (KM)	2.176
nu hat (KM)	256.1 nu star (KM)	243.7
theta hat (KM)	3.568 theta star (KM)	3.749
80% gamma percentile (KM)	12.09 90% gamma percentile (KM)	15.55
95% gamma percentile (KM)	18.84 99% gamma percentile (KM)	26.1
Gamma Kaplan-Meier (KM) Statistics		
Approximate Chi Square Value (243.67, α)	208.5 Adjusted Chi Square Value (243.67, β)	207.7
95% Gamma Approximate KM-UCL (use when n>=50)	9.531 95% Gamma Adjusted KM-UCL (use when n<50)	9.57
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Approximate Test Statistic	0.972 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.404 Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0692 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.12 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	8.169 Mean in Log Scale	1.881
SD in Original Scale	5.428 SD in Log Scale	0.701
95% t UCL (assumes normality of ROS data)	9.382 95% Percentile Bootstrap UCL	9.327
95% BCA Bootstrap UCL	9.537 95% Bootstrap t UCL	9.58
95% H-UCL (Log ROS)	10.16	
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution		
KM Mean (logged)	1.873 KM Geo Mean	6.505
KM SD (logged)	0.712 95% Critical H Value (KM-Log)	2.045
KM Standard Error of Mean (logged)	0.096 95% H-UCL (KM -Log)	10.2
KM SD (logged)	0.712 95% Critical H Value (KM-Log)	2.045
KM Standard Error of Mean (logged)	0.096	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	8.141 Mean in Log Scale	1.856
SD in Original Scale	5.464 SD in Log Scale	0.763
95% t UCL (Assumes normality)	9.363 95% H-Stat UCL	10.61
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM Approximate Gamma UCL	9.531 95% GROS Approximate Gamma UCL	9.728
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (english kills***copper***7440-50-8***t***mg/kg)		
General Statistics		
Total Number of Observations	71 Number of Distinct Observations	69
	Number of Missing Observations	0
Minimum	149 Mean	923.5
Maximum	4260 Median	787
SD	686.2 Std. Error of Mean	81.44
Coefficient of Variation	0.743 Skewness	2.391
Normal GOF Test		
Shapiro Wilk Test Statistic	0.794 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	1.37E-13 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.183 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1059 95% Adjusted-CLT UCL (Chen-1995)	1082
	95% Modified-t UCL (Johnson-1978)	1063
Gamma GOF Test		
A-D Test Statistic	0.676 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.761 Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.102 Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.107 Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	2.493 k star (bias corrected MLE)	2.397
Theta hat (MLE)	370.4 Theta star (bias corrected MLE)	385.2
nu hat (MLE)	354 nu star (bias corrected)	340.4
MLE Mean (bias corrected)	923.5 MLE Sd (bias corrected)	596.5
	Approximate Chi Square Value (0.05)	298.7
Adjusted Level of Significance	0.0466 Adjusted Chi Square Value	297.9
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50)	1053 95% Adjusted Gamma UCL (use when n<50)	1055

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.986	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0.867	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0804	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.105	Data appear Lognormal at 5% Significance Level
Data appear Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	5.004	Mean of logged Data
Maximum of Logged Data	8.357	SD of logged Data
Assuming Lognormal Distribution		
95% H-UCL	1079	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	1263	97.5% Chebyshev (MVUE) UCL
99% Chebyshev (MVUE) UCL	1701	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	1057	95% Jackknife UCL
95% Standard Bootstrap UCL	1055	95% Bootstrap-t UCL
95% Hall's Bootstrap UCL	1122	95% Percentile Bootstrap UCL
95% BCA Bootstrap UCL	1089	
90% Chebyshev(Mean, Sd) UCL	1168	95% Chebyshev(Mean, Sd) UCL
97.5% Chebyshev(Mean, Sd) UCL	1432	99% Chebyshev(Mean, Sd) UCL
Suggested UCL to Use		
95% Approximate Gamma UCL	1053	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (english kills***cyanide***57-12-5***mg/kg)		
General Statistics		
Total Number of Observations	71	Number of Distinct Observations
Number of Detects	35	Number of Non-Detects
Number of Distinct Detects	24	Number of Distinct Non-Detects
Minimum Detect	0.42	Minimum Non-Detect
Maximum Detect	7.5	Maximum Non-Detect
Variance Detects	1.313	Percent Non-Detects
Mean Detects	1.468	SD Detects
Median Detects	1.2	CV Detects
Skewness Detects	4.49	Kurtosis Detects
Mean of Logged Detects	0.24	SD of Logged Detects
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.542	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.934	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.239	Lilliefors GOF Test
5% Lilliefors Critical Value	0.148	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
KM Mean	0.942	KM Standard Error of Mean
KM SD	0.961	95% KM (BCA) UCL
95% KM (t) UCL	1.139	95% KM (Percentile Bootstrap) UCL
95% KM (z) UCL	1.136	95% KM Bootstrap t UCL
90% KM Chebyshev UCL	1.295	95% KM Chebyshev UCL
97.5% KM Chebyshev UCL	1.677	99% KM Chebyshev UCL
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.362	Anderson-Darling GOF Test
5% A-D Critical Value	0.753	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.148	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.149	Detected data appear Gamma Distributed at 5% Significance Level
Detected data follow Appr. Gamma Distribution at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.623	k star (bias corrected MLE)
Theta hat (MLE)	0.405	Theta star (bias corrected MLE)
nu hat (MLE)	253.6	nu star (bias corrected)
Mean (detects)	1.468	
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)		
For such situations, GROS method may yield incorrect values of UCLs and BTVs		
This is especially true when the sample size is small.		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean
Maximum	7.5	Median
SD	1.068	CV
k hat (MLE)	0.409	k star (bias corrected MLE)
Theta hat (MLE)	1.866	Theta star (bias corrected MLE)
nu hat (MLE)	58.15	nu star (bias corrected)
Adjusted Level of Significance (β)	0.0466	
Approximate Chi Square Value (57.02, α)	40.66	Adjusted Chi Square Value (57.02, β)
95% Gamma Approximate UCL (use when $n \geq 50$)	1.072	95% Gamma Adjusted UCL (use when $n < 50$)
Estimates of Gamma Parameters using KM Estimates		
Mean (KM)	0.942	SD (KM)
Variance (KM)	0.923	SE of Mean (KM)
k hat (KM)	0.962	k star (KM)
nu hat (KM)	136.6	nu star (KM)
theta hat (KM)	0.979	theta star (KM)
80% gamma percentile (KM)	1.525	90% gamma percentile (KM)
95% gamma percentile (KM)	2.895	99% gamma percentile (KM)
Gamma Kaplan-Meier (KM) Statistics		
Approximate Chi Square Value (132.21, α)	106.6	Adjusted Chi Square Value (132.21, β)
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.168	95% Gamma Adjusted KM-UCL (use when $n < 50$)
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.924	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.934	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.118	Lilliefors GOF Test
5% Lilliefors Critical Value	0.148	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.962	Mean in Log Scale
		-0.278

SD in Original Scale	0.947	SD in Log Scale	0.637
95% t UCL (assumes normality of ROS data)	1.15	95% Percentile Bootstrap UCL	1.166
95% BCA Bootstrap UCL	1.249	95% Bootstrap t UCL	1.272
95% H-UCL (Log ROS)	1.075		
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.356	KM Geo Mean	0.7
KM SD (logged)	0.734	95% Critical H Value (KM-Log)	2.016
KM Standard Error of Mean (logged)	0.0981	95% H-UCL (KM -Log)	1.095
KM SD (logged)	0.734	95% Critical H Value (KM-Log)	2.016
KM Standard Error of Mean (logged)	0.0981		
DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	0.938	Mean in Log Scale	-0.357
SD in Original Scale	0.963	SD in Log Scale	0.743
95% t UCL (Assumes normality)	1.129	95% H-Stat UCL	1.104
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM Approximate Gamma UCL	1.168	95% GROS Approximate Gamma UCL	1.072
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (english kills***lead***7439-92-1***t***mg/kg)			
General Statistics			
Total Number of Observations	71	Number of Distinct Observations	68
		Number of Missing Observations	0
Minimum	227	Mean	682.6
Maximum	1420	Median	648
SD	273.7	Std. Error of Mean	32.48
Coefficient of Variation	0.401	Skewness	0.898
Normal GOF Test			
Shapiro Wilk Test Statistic	0.927	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	4.26E-04	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.137	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	736.8	95% Adjusted-CLT UCL (Chen-1995)	739.8
		95% Modified-t UCL (Johnson-1978)	737.4
Gamma GOF Test			
A-D Test Statistic	0.375	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.753	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0863	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.106	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	6.585	k star (bias corrected MLE)	6.317
Theta hat (MLE)	103.7	Theta star (bias corrected MLE)	108.1
nu hat (MLE)	935.1	nu star (bias corrected)	896.9
MLE Mean (bias corrected)	682.6	MLE Sd (bias corrected)	271.6
		Approximate Chi Square Value (0.05)	828.4
Adjusted Level of Significance	0.0466	Adjusted Chi Square Value	827.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	739.1	95% Adjusted Gamma UCL (use when n<50)	740.3
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.974	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.368	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0675	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.105	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	5.425	Mean of logged Data	6.448
Maximum of Logged Data	7.258	SD of logged Data	0.403
Assuming Lognormal Distribution			
95% H-UCL	746.7	90% Chebyshev (MVUE) UCL	785.6
95% Chebyshev (MVUE) UCL	831.6	97.5% Chebyshev (MVUE) UCL	895.4
99% Chebyshev (MVUE) UCL	1021		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	736.1	95% Jackknife UCL	736.8
95% Standard Bootstrap UCL	736	95% Bootstrap-t UCL	743.8
95% Hall's Bootstrap UCL	738.5	95% Percentile Bootstrap UCL	736.6
95% BCA Bootstrap UCL	739.5		
90% Chebyshev(Mean, Sd) UCL	780.1	95% Chebyshev(Mean, Sd) UCL	824.2
97.5% Chebyshev(Mean, Sd) UCL	885.5	99% Chebyshev(Mean, Sd) UCL	1006
Suggested UCL to Use			
95% Approximate Gamma UCL	739.1		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (english kills***total dioxin/furan teq 1998 (fish)***tdioxfur****t***ng/kg)			
General Statistics			
Total Number of Observations	56	Number of Distinct Observations	56
		Number of Missing Observations	0

Minimum	6.494	Mean	159.4
Maximum	495.4	Median	129.1
SD	100.9	Std. Error of Mean	13.48
Coefficient of Variation	0.633	Skewness	1.299
Normal GOF Test			
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	8.30E-05	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.152	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.118	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	181.9	95% Adjusted-CLT UCL (Chen-1995)	184
		95% Modified-t UCL (Johnson-1978)	182.3
Gamma GOF Test			
A-D Test Statistic	0.559	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.761	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.115	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.12	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.404	k star (bias corrected MLE)	2.287
Theta hat (MLE)	66.3	Theta star (bias corrected MLE)	69.69
nu hat (MLE)	269.2	nu star (bias corrected)	256.1
MLE Mean (bias corrected)	159.4	MLE Sd (bias corrected)	105.4
		Approximate Chi Square Value (0.05)	220.1
Adjusted Level of Significance	0.0457	Adjusted Chi Square Value	219.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	185.5	95% Adjusted Gamma UCL (use when n<50)	186.2
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.914	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	4.99E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.163	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.118	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.871	Mean of logged Data	4.849
Maximum of Logged Data	6.205	SD of logged Data	0.76
Assuming Lognormal Distribution			
95% H-UCL	211	90% Chebyshev (MVUE) UCL	226.6
95% Chebyshev (MVUE) UCL	252.6	97.5% Chebyshev (MVUE) UCL	288.7
99% Chebyshev (MVUE) UCL	359.5		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	181.5	95% Jackknife UCL	181.9
95% Standard Bootstrap UCL	181.4	95% Bootstrap-t UCL	184.3
95% Hall's Bootstrap UCL	184.3	95% Percentile Bootstrap UCL	182.2
95% BCA Bootstrap UCL	182.4		
90% Chebyshev(Mean, Sd) UCL	199.8	95% Chebyshev(Mean, Sd) UCL	218.1
97.5% Chebyshev(Mean, Sd) UCL	243.5	99% Chebyshev(Mean, Sd) UCL	293.5
Suggested UCL to Use			
95% Approximate Gamma UCL	185.5		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

RESULT_VALUE_MDL (english kills***total pah (17)***tpah_17***t***ug/kg)

General Statistics			
Total Number of Observations	71	Number of Distinct Observations	71
		Number of Missing Observations	0
Minimum	5863	Mean	80113
Maximum	285580	Median	69534
SD	47965	Std. Error of Mean	5692
Coefficient of Variation	0.599	Skewness	2.011
Normal GOF Test			
Shapiro Wilk Test Statistic	0.839	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	1.83E-10	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.162	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	89602	95% Adjusted-CLT UCL (Chen-1995)	90928
		95% Modified-t UCL (Johnson-1978)	89828
Gamma GOF Test			
A-D Test Statistic	0.845	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0946	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.106	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.348	k star (bias corrected MLE)	3.216
Theta hat (MLE)	23928	Theta star (bias corrected MLE)	24911
nu hat (MLE)	475.4	nu star (bias corrected)	456.7
MLE Mean (bias corrected)	80113	MLE Sd (bias corrected)	44673
		Approximate Chi Square Value (0.05)	408.1
Adjusted Level of Significance	0.0466	Adjusted Chi Square Value	407.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	89643	95% Adjusted Gamma UCL (use when n<50)	89850
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.955	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0341	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.118	Lilliefors Lognormal GOF Test	

5% Lilliefors Critical Value	0.105 Data Not Lognormal at 5% Significance Level		
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	8.676	Mean of logged Data	11.13
Maximum of Logged Data	12.56	SD of logged Data	0.59
Assuming Lognormal Distribution			
95% H-UCL	93280	90% Chebyshev (MVUE) UCL	99623
95% Chebyshev (MVUE) UCL	107926	97.5% Chebyshev (MVUE) UCL	119450
99% Chebyshev (MVUE) UCL	142087		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	89476	95% Jackknife UCL	89602
95% Standard Bootstrap UCL	89738	95% Bootstrap-t UCL	91400
95% Hall's Bootstrap UCL	91357	95% Percentile Bootstrap UCL	89748
95% BCA Bootstrap UCL	90932		
90% Chebyshev(Mean, Sd) UCL	97190	95% Chebyshev(Mean, Sd) UCL	104926
97.5% Chebyshev(Mean, Sd) UCL	115662	99% Chebyshev(Mean, Sd) UCL	136752
Suggested UCL to Use			
95% Approximate Gamma UCL	89643		

When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (english kills***total pah (34)***tpah_34_nc****t**ug/kg)

General Statistics			
Total Number of Observations	71	Number of Distinct Observations	71
		Number of Missing Observations	0
Minimum	10170	Mean	250009
Maximum	1945500	Median	137354
SD	338626	Std. Error of Mean	40188
Coefficient of Variation	1.354	Skewness	3.603
Normal GOF Test			
Shapiro Wilk Test Statistic	0.546	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.314	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	316998	95% Adjusted-CLT UCL (Chen-1995)	334474
		95% Modified-t UCL (Johnson-1978)	319862
Gamma GOF Test			
A-D Test Statistic	4.323	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.774	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.228	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.108	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.279	k star (bias corrected MLE)	1.234
Theta hat (MLE)	195508	Theta star (bias corrected MLE)	202581
nu hat (MLE)	181.6	nu star (bias corrected)	175.2
MLE Mean (bias corrected)	250009	MLE Sd (bias corrected)	225049
		Approximate Chi Square Value (0.05)	145.6
Adjusted Level of Significance	0.0466	Adjusted Chi Square Value	145.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	300851	95% Adjusted Gamma UCL (use when n<50)	302005
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.00421	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.152	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.105	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	9.227	Mean of logged Data	11.99
Maximum of Logged Data	14.48	SD of logged Data	0.862
Assuming Lognormal Distribution			
95% H-UCL	290872	90% Chebyshev (MVUE) UCL	313719
95% Chebyshev (MVUE) UCL	350720	97.5% Chebyshev (MVUE) UCL	402075
99% Chebyshev (MVUE) UCL	502951		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	316111	95% Jackknife UCL	316998
95% Standard Bootstrap UCL	315259	95% Bootstrap-t UCL	358728
95% Hall's Bootstrap UCL	379154	95% Percentile Bootstrap UCL	322278
95% BCA Bootstrap UCL	339515		
90% Chebyshev(Mean, Sd) UCL	370571	95% Chebyshev(Mean, Sd) UCL	425182
97.5% Chebyshev(Mean, Sd) UCL	500980	99% Chebyshev(Mean, Sd) UCL	649869
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	425182		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (english kills***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175****t***mg/kg)

General Statistics			
Total Number of Observations	71	Number of Distinct Observations	71

	Number of Missing Observations		0
Minimum	0.398	Mean	12.03
Maximum	63	Median	8.362
SD	12.34	Std. Error of Mean	1.465
Coefficient of Variation	1.026	Skewness	2.473
Normal GOF Test			
Shapiro Wilk Test Statistic	0.726	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.192	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.105	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	14.47	95% Adjusted-CLT UCL (Chen-1995)	14.89
		95% Modified-t UCL (Johnson-1978)	14.54
Gamma GOF Test			
A-D Test Statistic	0.774	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.772	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0808	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.108	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.358	k star (bias corrected MLE)	1.31
Theta hat (MLE)	8.858	Theta star (bias corrected MLE)	9.183
nu hat (MLE)	192.8	nu star (bias corrected)	186
MLE Mean (bias corrected)	12.03	MLE Sd (bias corrected)	10.51
		Approximate Chi Square Value (0.05)	155.4
Adjusted Level of Significance	0.0466	Adjusted Chi Square Value	154.8
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	14.39	95% Adjusted Gamma UCL (use when n<50)	14.44
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.976	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.452	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.061	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.105	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-0.921	Mean of logged Data	2.076
Maximum of Logged Data	4.143	SD of logged Data	0.955
Assuming Lognormal Distribution			
95% H-UCL	16.18	90% Chebyshev (MVUE) UCL	17.44
95% Chebyshev (MVUE) UCL	19.69	97.5% Chebyshev (MVUE) UCL	22.82
99% Chebyshev (MVUE) UCL	28.97		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	14.43	95% Jackknife UCL	14.47
95% Standard Bootstrap UCL	14.48	95% Bootstrap-t UCL	15.35
95% Hall's Bootstrap UCL	15.39	95% Percentile Bootstrap UCL	14.52
95% BCA Bootstrap UCL	15		
90% Chebyshev(Mean, Sd) UCL	16.42	95% Chebyshev(Mean, Sd) UCL	18.41
97.5% Chebyshev(Mean, Sd) UCL	21.17	99% Chebyshev(Mean, Sd) UCL	26.6
Suggested UCL to Use			
95% Approximate Gamma UCL	14.39		
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (maspeth creek***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***ng/kg)			
General Statistics			
Total Number of Observations	19	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	0.853	Mean	2.941
Maximum	8.32	Median	2.74
SD	1.649	Std. Error of Mean	0.378
Coefficient of Variation	0.561	Skewness	1.91
Normal GOF Test			
Shapiro Wilk Test Statistic	0.836	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.189	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.197	Data appear Normal at 5% Significance Level	
Data appear Approximate Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3.597	95% Adjusted-CLT UCL (Chen-1995)	3.741
		95% Modified-t UCL (Johnson-1978)	3.625
Gamma GOF Test			
A-D Test Statistic	0.362	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.745	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.199	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.912	k star (bias corrected MLE)	3.33
Theta hat (MLE)	0.752	Theta star (bias corrected MLE)	0.883
nu hat (MLE)	148.7	nu star (bias corrected)	126.5
MLE Mean (bias corrected)	2.941	MLE Sd (bias corrected)	1.612
		Approximate Chi Square Value (0.05)	101.5
Adjusted Level of Significance	0.0369	Adjusted Chi Square Value	99.59
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	3.664	95% Adjusted Gamma UCL (use when n<50)	3.736

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.957	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.139	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.197	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-0.159	Mean of logged Data	0.946
Maximum of Logged Data	2.119	SD of logged Data	0.539
Assuming Lognormal Distribution			
95% H-UCL	3.859	90% Chebyshev (MVUE) UCL	4.089
95% Chebyshev (MVUE) UCL	4.605	97.5% Chebyshev (MVUE) UCL	5.321
99% Chebyshev (MVUE) UCL	6.727		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3.563	95% Jackknife UCL	3.597
95% Standard Bootstrap UCL	3.537	95% Bootstrap-t UCL	3.881
95% Hall's Bootstrap UCL	6.645	95% Percentile Bootstrap UCL	3.589
95% BCA Bootstrap UCL	3.789		
90% Chebyshev(Mean, Sd) UCL	4.076	95% Chebyshev(Mean, Sd) UCL	4.59
97.5% Chebyshev(Mean, Sd) UCL	5.304	99% Chebyshev(Mean, Sd) UCL	6.706
Suggested UCL to Use			
95% Student's-t UCL	3.597		
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (maspeth creek***copper***7440-50-8***t***mg/kg)			
General Statistics			
Total Number of Observations	23	Number of Distinct Observations	23
		Number of Missing Observations	0
Minimum	72.4	Mean	730.7
Maximum	5940	Median	402
SD	1181	Std. Error of Mean	246.3
Coefficient of Variation	1.616	Skewness	4.253
Normal GOF Test			
Shapiro Wilk Test Statistic	0.434	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.363	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.18	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1154	95% Adjusted-CLT UCL (Chen-1995)	1369
		95% Modified-t UCL (Johnson-1978)	1190
Gamma GOF Test			
A-D Test Statistic	1.641	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.766	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.218	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.186	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.195	k star (bias corrected MLE)	1.069
Theta hat (MLE)	611.2	Theta star (bias corrected MLE)	683.9
nu hat (MLE)	54.99	nu star (bias corrected)	49.15
MLE Mean (bias corrected)	730.7	MLE Sd (bias corrected)	706.9
		Approximate Chi Square Value (0.05)	34.06
Adjusted Level of Significance	0.0389	Adjusted Chi Square Value	33.15
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1055	95% Adjusted Gamma UCL (use when n<50)	1084
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.924	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.142	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.18	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.282	Mean of logged Data	6.121
Maximum of Logged Data	8.689	SD of logged Data	0.863
Assuming Lognormal Distribution			
95% H-UCL	1018	90% Chebyshev (MVUE) UCL	1031
95% Chebyshev (MVUE) UCL	1206	97.5% Chebyshev (MVUE) UCL	1448
99% Chebyshev (MVUE) UCL	1923		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1136	95% Jackknife UCL	1154
95% Standard Bootstrap UCL	1124	95% Bootstrap-t UCL	2406
95% Hall's Bootstrap UCL	2861	95% Percentile Bootstrap UCL	1196
95% BCA Bootstrap UCL	1490		
90% Chebyshev(Mean, Sd) UCL	1470	95% Chebyshev(Mean, Sd) UCL	1804
97.5% Chebyshev(Mean, Sd) UCL	2269	99% Chebyshev(Mean, Sd) UCL	3181
Suggested UCL to Use			
95% H-UCL	1018		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only.			

H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

RESULT_VALUE_MDL (maspeth creek***cyanide***57-12-5***t***mg/kg)

General Statistics		
Total Number of Observations	23	Number of Distinct Observations 18
Number of Detects	9	Number of Non-Detects 14
Number of Distinct Detects	8	Number of Distinct Non-Detects 13
Minimum Detect	0.53	Minimum Non-Detect 0.34
Maximum Detect	1.5	Maximum Non-Detect 1.1
Variance Detects	0.102	Percent Non-Detects 60.87%
Mean Detects	0.963	SD Detects 0.32
Median Detects	0.82	CV Detects 0.332
Skewness Detects	0.663	Kurtosis Detects -0.472
Mean of Logged Detects	-0.0854	SD of Logged Detects 0.329
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.919	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.229	Lilliefors GOF Test
5% Lilliefors Critical Value	0.274	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
KM Mean	0.621	KM Standard Error of Mean 0.0816
KM SD	0.346	95% KM (BCA) UCL 0.782
95% KM (t) UCL	0.761	95% KM (Percentile Bootstrap) UCL 0.777
95% KM (z) UCL	0.755	95% KM Bootstrap t UCL 0.774
90% KM Chebyshev UCL	0.865	95% KM Chebyshev UCL 0.976
97.5% KM Chebyshev UCL	1.13	99% KM Chebyshev UCL 1.432
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.336	Anderson-Darling GOF Test
5% A-D Critical Value	0.722	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.213	Kolmogorov-Smirnov GOF
5% K-S Critical Value	0.279	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	10.57	k star (bias corrected MLE) 7.121
Theta hat (MLE)	0.0911	Theta star (bias corrected MLE) 0.135
nu hat (MLE)	190.3	nu star (bias corrected) 128.2
Mean (detects)	0.963	
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)		
For such situations, GROS method may yield incorrect values of UCLs and BTVs		
This is especially true when the sample size is small.		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.14	Mean 0.544
Maximum	1.5	Median 0.387
SD	0.4	CV 0.735
k hat (MLE)	2.218	k star (bias corrected MLE) 1.958
Theta hat (MLE)	0.245	Theta star (bias corrected MLE) 0.278
nu hat (MLE)	102	nu star (bias corrected) 90.06
Adjusted Level of Significance (β)	0.0389	
Approximate Chi Square Value (90.06, α)	69.18	Adjusted Chi Square Value (90.06, β) 67.85
95% Gamma Approximate UCL (use when n>=50)	0.708	95% Gamma Adjusted UCL (use when n<50) 0.722
Estimates of Gamma Parameters using KM Estimates		
Mean (KM)	0.621	SD (KM) 0.346
Variance (KM)	0.12	SE of Mean (KM) 0.0816
k hat (KM)	3.213	k star (KM) 2.823
nu hat (KM)	147.8	nu star (KM) 129.8
theta hat (KM)	0.193	theta star (KM) 0.22
80% gamma percentile (KM)	0.892	90% gamma percentile (KM) 1.116
95% gamma percentile (KM)	1.326	99% gamma percentile (KM) 1.782
Gamma Kaplan-Meier (KM) Statistics		
Approximate Chi Square Value (129.84, α)	104.5	Adjusted Chi Square Value (129.84, β) 102.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.771	95% Gamma Adjusted KM-UCL (use when n<50) 0.783
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.951	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.19	Lilliefors GOF Test
5% Lilliefors Critical Value	0.274	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.628	Mean in Log Scale -0.577
SD in Original Scale	0.338	SD in Log Scale 0.458
95% t UCL (assumes normality of ROS data)	0.749	95% Percentile Bootstrap UCL 0.742
95% BCA Bootstrap UCL	0.763	95% Bootstrap t UCL 0.796
95% H-UCL (Log ROS)	0.754	
Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution		
KM Mean (logged)	-0.612	KM Geo Mean 0.543
KM SD (logged)	0.502	95% Critical H Value (KM-Log) 1.975
KM Standard Error of Mean (logged)	0.127	95% H-UCL (KM -Log) 0.76
KM SD (logged)	0.502	95% Critical H Value (KM-Log) 1.975
KM Standard Error of Mean (logged)	0.127	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.578	Mean in Log Scale -0.732
SD in Original Scale	0.377	SD in Log Scale 0.612
95% t UCL (Assumes normality)	0.714	95% H-Stat UCL 0.761
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.761	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (maspeth creek***lead***7439-92-1***t***mg/kg)

General Statistics			
Total Number of Observations	23	Number of Distinct Observations	22
		Number of Missing Observations	0
Minimum	55.9	Mean	368
Maximum	1280	Median	313
SD	239.9	Std. Error of Mean	50.03
Coefficient of Variation	0.652	Skewness	2.515
Normal GOF Test			
Shapiro Wilk Test Statistic	0.76	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.201	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.18	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	453.9	95% Adjusted-CLT UCL (Chen-1995)	478.3
		95% Modified-t UCL (Johnson-1978)	458.3
Gamma GOF Test			
A-D Test Statistic	0.798	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.751	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.141	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.183	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.859	k star (bias corrected MLE)	2.515
Theta hat (MLE)	128.7	Theta star (bias corrected MLE)	146.3
nu hat (MLE)	131.5	nu star (bias corrected)	115.7
MLE Mean (bias corrected)	368	MLE Sd (bias corrected)	232
		Approximate Chi Square Value (0.05)	91.86
Adjusted Level of Significance	0.0389	Adjusted Chi Square Value	90.32
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	463.5	95% Adjusted Gamma UCL (use when n<50)	471.4
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.873	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.174	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.18	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.024	Mean of logged Data	5.723
Maximum of Logged Data	7.155	SD of logged Data	0.669
Assuming Lognormal Distribution			
95% H-UCL	518.8	90% Chebyshev (MVUE) UCL	547.1
95% Chebyshev (MVUE) UCL	623.7	97.5% Chebyshev (MVUE) UCL	729.9
99% Chebyshev (MVUE) UCL	938.5		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	450.3	95% Jackknife UCL	453.9
95% Standard Bootstrap UCL	449	95% Bootstrap-t UCL	497.9
95% Hall's Bootstrap UCL	874.2	95% Percentile Bootstrap UCL	454.5
95% BCA Bootstrap UCL	490.5		
90% Chebyshev(Mean, Sd) UCL	518.1	95% Chebyshev(Mean, Sd) UCL	586.1
97.5% Chebyshev(Mean, Sd) UCL	680.4	99% Chebyshev(Mean, Sd) UCL	865.8
Suggested UCL to Use			
95% Adjusted Gamma UCL	471.4		
When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test			
When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

RESULT_VALUE_MDL (maspeth creek***total dioxin/furan teq 1998 (fish)***tdioxurf***t***ng/kg)

General Statistics			
Total Number of Observations	19	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	14.64	Mean	87.03
Maximum	200.1	Median	86.07
SD	42.23	Std. Error of Mean	9.689
Coefficient of Variation	0.485	Skewness	0.755
Normal GOF Test			
Shapiro Wilk Test Statistic	0.96	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.103	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.197	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	103.8	95% Adjusted-CLT UCL (Chen-1995)	104.8
		95% Modified-t UCL (Johnson-1978)	104.1
Gamma GOF Test			
A-D Test Statistic	0.326	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.746	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.121	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.199	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.798	k star (bias corrected MLE)	3.233
Theta hat (MLE)	22.91	Theta star (bias corrected MLE)	26.92
nu hat (MLE)	144.3	nu star (bias corrected)	122.9
MLE Mean (bias corrected)	87.03	MLE Sd (bias corrected)	48.4
		Approximate Chi Square Value (0.05)	98.27
Adjusted Level of Significance	0.0369	Adjusted Chi Square Value	96.35

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	108.8	95% Adjusted Gamma UCL (use when n<50)	111
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.915	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.158	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.197	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.684	Mean of logged Data	4.329
Maximum of Logged Data	5.299	SD of logged Data	0.594
Assuming Lognormal Distribution			
95% H-UCL	121.5	90% Chebyshev (MVUE) UCL	128
95% Chebyshev (MVUE) UCL	145.4	97.5% Chebyshev (MVUE) UCL	169.5
99% Chebyshev (MVUE) UCL	216.9		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	103	95% Jackknife UCL	103.8
95% Standard Bootstrap UCL	102.3	95% Bootstrap-t UCL	105.8
95% Hall's Bootstrap UCL	107.7	95% Percentile Bootstrap UCL	103.1
95% BCA Bootstrap UCL	103.5		
90% Chebyshev(Mean, Sd) UCL	116.1	95% Chebyshev(Mean, Sd) UCL	129.3
97.5% Chebyshev(Mean, Sd) UCL	147.5	99% Chebyshev(Mean, Sd) UCL	183.4
Suggested UCL to Use			
95% Student's-t UCL	103.8		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (maspeth creek****total pah (17)****pah_17****ug/kg)			
General Statistics			
Total Number of Observations	23	Number of Distinct Observations	23
		Number of Missing Observations	0
Minimum	5631	Mean	62253
Maximum	178119	Median	53146
SD	38448	Std. Error of Mean	8017
Coefficient of Variation	0.618	Skewness	1.726
Normal GOF Test			
Shapiro Wilk Test Statistic	0.831	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.199	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.18	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	76019	95% Adjusted-CLT UCL (Chen-1995)	78523
		95% Modified-t UCL (Johnson-1978)	76500
Gamma GOF Test			
A-D Test Statistic	0.696	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.751	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.136	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.183	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.916	k star (bias corrected MLE)	2.564
Theta hat (MLE)	21351	Theta star (bias corrected MLE)	24276
nu hat (MLE)	134.1	nu star (bias corrected)	118
MLE Mean (bias corrected)	62253	MLE Sd (bias corrected)	38875
		Approximate Chi Square Value (0.05)	93.88
Adjusted Level of Significance	0.0389	Adjusted Chi Square Value	92.33
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	78218	95% Adjusted Gamma UCL (use when n<50)	79536
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.878	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.178	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.18	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	8.636	Mean of logged Data	10.86
Maximum of Logged Data	12.09	SD of logged Data	0.674
Assuming Lognormal Distribution			
95% H-UCL	88692	90% Chebyshev (MVUE) UCL	93466
95% Chebyshev (MVUE) UCL	106616	97.5% Chebyshev (MVUE) UCL	124869
99% Chebyshev (MVUE) UCL	160722		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	75439	95% Jackknife UCL	76019
95% Standard Bootstrap UCL	75018	95% Bootstrap-t UCL	82556
95% Hall's Bootstrap UCL	94845	95% Percentile Bootstrap UCL	74933
95% BCA Bootstrap UCL	77623		
90% Chebyshev(Mean, Sd) UCL	86303	95% Chebyshev(Mean, Sd) UCL	97197
97.5% Chebyshev(Mean, Sd) UCL	112318	99% Chebyshev(Mean, Sd) UCL	142019
Suggested UCL to Use			
95% Adjusted Gamma UCL	79536		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			

RESULT_VALUE_MDL (maspeth creek***total pah (34)**tpah_34_nc***t***ug/kg)

General Statistics			
Total Number of Observations	23	Number of Distinct Observations	23
		Number of Missing Observations	0
Minimum	10657	Mean	171563
Maximum	900269	Median	107435
SD	186654	Std. Error of Mean	38920
Coefficient of Variation	1.088	Skewness	2.989
Normal GOF Test			
Shapiro Wilk Test Statistic	0.656	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.271	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.18	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	238394	95% Adjusted-CLT UCL (Chen-1995)	261503
		95% Modified-t UCL (Johnson-1978)	242438
Gamma GOF Test			
A-D Test Statistic	0.809	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.761	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.193	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.185	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.474	k star (bias corrected MLE)	1.311
Theta hat (MLE)	116380	Theta star (bias corrected MLE)	130878
nu hat (MLE)	67.81	nu star (bias corrected)	60.3
MLE Mean (bias corrected)	171563	MLE Sd (bias corrected)	149846
		Approximate Chi Square Value (0.05)	43.44
Adjusted Level of Significance	0.0389	Adjusted Chi Square Value	42.41
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	238135	95% Adjusted Gamma UCL (use when n<50)	243959
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.134	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.18	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	9.274	Mean of logged Data	11.68
Maximum of Logged Data	13.71	SD of logged Data	0.886
Assuming Lognormal Distribution			
95% H-UCL	273553	90% Chebyshev (MVUE) UCL	275208
95% Chebyshev (MVUE) UCL	322633	97.5% Chebyshev (MVUE) UCL	388458
99% Chebyshev (MVUE) UCL	517758		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	235581	95% Jackknife UCL	238394
95% Standard Bootstrap UCL	234567	95% Bootstrap-t UCL	298518
95% Hall's Bootstrap UCL	493331	95% Percentile Bootstrap UCL	238991
95% BCA Bootstrap UCL	260459		
90% Chebyshev(Mean, Sd) UCL	288323	95% Chebyshev(Mean, Sd) UCL	341212
97.5% Chebyshev(Mean, Sd) UCL	414619	99% Chebyshev(Mean, Sd) UCL	558813
Suggested UCL to Use			
95% H-UCL	273553		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

RESULT_VALUE_MDL (maspeth creek***total pcb (aroclor*1.75 and congener)**tpcb_cong_aro175****mg/kg)

General Statistics			
Total Number of Observations	23	Number of Distinct Observations	23
		Number of Missing Observations	0
Minimum	0.289	Mean	3.062
Maximum	25.04	Median	1.418
SD	5.6	Std. Error of Mean	1.168
Coefficient of Variation	1.828	Skewness	3.435
Normal GOF Test			
Shapiro Wilk Test Statistic	0.456	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.434	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.18	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	5.067	95% Adjusted-CLT UCL (Chen-1995)	5.877
		95% Modified-t UCL (Johnson-1978)	5.207
Gamma GOF Test			
A-D Test Statistic	2.182	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.777	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.305	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.188	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.86	k star (bias corrected MLE)	0.777
Theta hat (MLE)	3.561	Theta star (bias corrected MLE)	3.942
nu hat (MLE)	39.56	nu star (bias corrected)	35.74

MLE Mean (bias corrected)	3.062	MLE Sd (bias corrected)	3.474
		Approximate Chi Square Value (0.05)	23.06
Adjusted Level of Significance	0.0389	Adjusted Chi Square Value	22.32
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	4.747	95% Adjusted Gamma UCL (use when n<50)	4.904
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.903	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.914	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.18	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-1.242	Mean of logged Data	0.436
Maximum of Logged Data	3.221	SD of logged Data	1.015
Assuming Lognormal Distribution			
95% H-UCL	4.488	90% Chebyshev (MVUE) UCL	4.308
95% Chebyshev (MVUE) UCL	5.125	97.5% Chebyshev (MVUE) UCL	6.258
99% Chebyshev (MVUE) UCL	8.484		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	4.983	95% Jackknife UCL	5.067
95% Standard Bootstrap UCL	4.989	95% Bootstrap-t UCL	15.04
95% Hall's Bootstrap UCL	16.13	95% Percentile Bootstrap UCL	5.104
95% BCA Bootstrap UCL	5.941		
90% Chebyshev(Mean, Sd) UCL	6.565	95% Chebyshev(Mean, Sd) UCL	8.152
97.5% Chebyshev(Mean, Sd) UCL	10.35	99% Chebyshev(Mean, Sd) UCL	14.68
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	8.152		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (whale creek***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)

General Statistics			
Total Number of Observations	8	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	4.75	Mean	18.64
Maximum	65	Median	11
SD	20.03	Std. Error of Mean	7.083
Coefficient of Variation	1.075	Skewness	2.238

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test			
Shapiro Wilk Test Statistic	0.678	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.382	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	32.06	95% Adjusted-CLT UCL (Chen-1995)	36.28
		95% Modified-t UCL (Johnson-1978)	32.99
Gamma GOF Test			
A-D Test Statistic	0.731	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.728	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.348	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.299	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.576	k star (bias corrected MLE)	1.068
Theta hat (MLE)	11.83	Theta star (bias corrected MLE)	17.45
nu hat (MLE)	25.21	nu star (bias corrected)	17.09
MLE Mean (bias corrected)	18.64	MLE Sd (bias corrected)	18.04
		Approximate Chi Square Value (0.05)	8.736
Adjusted Level of Significance	0.0195	Adjusted Chi Square Value	7.277
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	36.46	95% Adjusted Gamma UCL (use when n<50)	43.78
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.899	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.818	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.298	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.283	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.558	Mean of logged Data	2.576
Maximum of Logged Data	4.174	SD of logged Data	0.822
Assuming Lognormal Distribution			
95% H-UCL	46.8	90% Chebyshev (MVUE) UCL	33.04
95% Chebyshev (MVUE) UCL	40.09	97.5% Chebyshev (MVUE) UCL	49.86
99% Chebyshev (MVUE) UCL	69.06		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	30.29	95% Jackknife UCL	32.06
95% Standard Bootstrap UCL	29.58	95% Bootstrap-t UCL	90.92
95% Hall's Bootstrap UCL	109.6	95% Percentile Bootstrap UCL	31.13
95% BCA Bootstrap UCL	34.23		
90% Chebyshev(Mean, Sd) UCL	39.89	95% Chebyshev(Mean, Sd) UCL	49.51
97.5% Chebyshev(Mean, Sd) UCL	62.87	99% Chebyshev(Mean, Sd) UCL	89.11

Suggested UCL to Use		
95% H-UCL	46.8	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.		
RESULT_VALUE_MDL (whale creek***copper***7440-50-8***t***mg/kg)		
General Statistics		
Total Number of Observations	9 Number of Distinct Observations	9
	Number of Missing Observations	0
Minimum	80.9 Mean	296.4
Maximum	526 Median	277
SD	132.4 Std. Error of Mean	44.13
Coefficient of Variation	0.447 Skewness	0.235
Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1		
Normal GOF Test		
Shapiro Wilk Test Statistic	0.977 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829 Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.174 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274 Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	378.5 95% Adjusted-CLT UCL (Chen-1995)	372.7
	95% Modified-t UCL (Johnson-1978)	379.1
Gamma GOF Test		
A-D Test Statistic	0.271 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.724 Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.168 Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.28 Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	4.643 k star (bias corrected MLE)	3.169
Theta hat (MLE)	63.85 Theta star (bias corrected MLE)	93.54
nu hat (MLE)	83.57 nu star (bias corrected)	57.04
MLE Mean (bias corrected)	296.4 MLE Sd (bias corrected)	166.5
	Approximate Chi Square Value (0.05)	40.68
Adjusted Level of Significance	0.0231 Adjusted Chi Square Value	37.79
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	415.6 95% Adjusted Gamma UCL (use when n<50)	447.5
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.908 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.829 Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.198 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.274 Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	4.393 Mean of logged Data	5.58
Maximum of Logged Data	6.265 SD of logged Data	0.545
Assuming Lognormal Distribution		
95% H-UCL	479.6 90% Chebyshev (MVUE) UCL	469.2
95% Chebyshev (MVUE) UCL	545 97.5% Chebyshev (MVUE) UCL	650.1
99% Chebyshev (MVUE) UCL	856.6	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	369 95% Jackknife UCL	378.5
95% Standard Bootstrap UCL	366 95% Bootstrap-t UCL	386.3
95% Hall's Bootstrap UCL	410.3 95% Percentile Bootstrap UCL	364.5
95% BCA Bootstrap UCL	366	
90% Chebyshev(Mean, Sd) UCL	428.8 95% Chebyshev(Mean, Sd) UCL	488.8
97.5% Chebyshev(Mean, Sd) UCL	572 99% Chebyshev(Mean, Sd) UCL	735.5
Suggested UCL to Use		
95% Student's-t UCL	378.5	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (whale creek***cyanide***57-12-5***t***mg/kg)		
General Statistics		
Total Number of Observations	9 Number of Distinct Observations	9
Number of Detects	2 Number of Non-Detects	7
Number of Distinct Detects	2 Number of Distinct Non-Detects	7
Minimum Detect	0.93 Minimum Non-Detect	0.33
Maximum Detect	1.4 Maximum Non-Detect	0.91
Variance Detects	0.11 Percent Non-Detects	77.78%
Mean Detects	1.165 SD Detects	0.332
Median Detects	1.165 CV Detects	0.285
Skewness Detects	N/A Kurtosis Detects	N/A
Mean of Logged Detects	0.132 SD of Logged Detects	0.289
Warning: Data set has only 2 Detected Values. This is not enough to compute meaningful or reliable statistics and estimates.		
Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).		

Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test on Detects Only
Not Enough Data to Perform GOF Test

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
KM Mean	0.516	KM Standard Error of Mean	0.172
KM SD	0.364	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.835	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.798	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.031	95% KM Chebyshev UCL	1.264
97.5% KM Chebyshev UCL	1.588	99% KM Chebyshev UCL	2.225

Gamma GOF Tests on Detected Observations Only
Not Enough Data to Perform GOF Test

Gamma Statistics on Detected Data Only			
k hat (MLE)	24.24	k star (bias corrected MLE)	N/A
Theta hat (MLE)	0.0481	Theta star (bias corrected MLE)	N/A
nu hat (MLE)	96.95	nu star (bias corrected)	N/A
Mean (detects)	1.165		

Estimates of Gamma Parameters using KM Estimates			
Mean (KM)	0.516	SD (KM)	0.364
Variance (KM)	0.133	SE of Mean (KM)	0.172
k hat (KM)	2.002	k star (KM)	1.409
nu hat (KM)	36.03	nu star (KM)	25.35
theta hat (KM)	0.258	theta star (KM)	0.366
80% gamma percentile (KM)	0.803	90% gamma percentile (KM)	1.091
95% gamma percentile (KM)	1.372	99% gamma percentile (KM)	2.008

Gamma Kaplan-Meier (KM) Statistics			
		Adjusted Level of Significance (β)	0.0231
Approximate Chi Square Value (25.35, α)	14.88	Adjusted Chi Square Value (25.35, β)	13.22
95% Gamma Approximate KM-UCL (use when n>=50)	0.878	95% Gamma Adjusted KM-UCL (use when n<50)	0.989

Lognormal GOF Test on Detected Observations Only
Not Enough Data to Perform GOF Test

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.446	Mean in Log Scale	-1.078
SD in Original Scale	0.424	SD in Log Scale	0.693
95% t UCL (assumes normality of ROS data)	0.709	95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A	95% Bootstrap t UCL	N/A
95% H-UCL (Log ROS)	0.82		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution			
KM Mean (logged)	-0.833	KM Geo Mean	0.435
KM SD (logged)	0.525	95% Critical H Value (KM-Log)	2.268
KM Standard Error of Mean (logged)	0.247	95% H-UCL (KM -Log)	0.76
KM SD (logged)	0.525	95% Critical H Value (KM-Log)	2.268
KM Standard Error of Mean (logged)	0.247		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.539	Mean in Log Scale	-0.801
SD in Original Scale	0.384	SD in Log Scale	0.622
95% t UCL (Assumes normality)	0.778	95% H-Stat UCL	0.94
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	0.835	KM H-UCL	0.76
95% KM (BCA) UCL	N/A		
Warning: One or more Recommended UCL(s) not available!			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (whale creek***lead***7439-92-1***t***mg/kg)

General Statistics			
Total Number of Observations	9	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	76.1	Mean	237.9
Maximum	426	Median	206
SD	105.7	Std. Error of Mean	35.23
Coefficient of Variation	0.444	Skewness	0.433

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test			
Shapiro Wilk Test Statistic	0.975	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.174	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.274	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	303.4	95% Adjusted-CLT UCL (Chen-1995)	301.3
		95% Modified-t UCL (Johnson-1978)	304.3

Gamma GOF Test			
A-D Test Statistic	0.192	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.723	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.131	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.28	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	5.11	k star (bias corrected MLE)	3.481
Theta hat (MLE)	46.56	Theta star (bias corrected MLE)	68.35
nu hat (MLE)	91.98	nu star (bias corrected)	62.65
MLE Mean (bias corrected)	237.9	MLE Sd (bias corrected)	127.5
		Approximate Chi Square Value (0.05)	45.44
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value	42.37

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	328	95% Adjusted Gamma UCL (use when n<50)	351.8
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.947	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.164	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.332	Mean of logged Data	5.371
Maximum of Logged Data	6.054	SD of logged Data	0.504
Assuming Lognormal Distribution			
95% H-UCL	363.7	90% Chebyshev (MVUE) UCL	363.5
95% Chebyshev (MVUE) UCL	419.2	97.5% Chebyshev (MVUE) UCL	496.6
99% Chebyshev (MVUE) UCL	648.5		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	295.9	95% Jackknife UCL	303.4
95% Standard Bootstrap UCL	293.5	95% Bootstrap-t UCL	312.4
95% Hall's Bootstrap UCL	308	95% Percentile Bootstrap UCL	292.8
95% BCA Bootstrap UCL	300.2		
90% Chebyshev(Mean, Sd) UCL	343.6	95% Chebyshev(Mean, Sd) UCL	391.5
97.5% Chebyshev(Mean, Sd) UCL	457.9	99% Chebyshev(Mean, Sd) UCL	588.5
Suggested UCL to Use			
95% Student's-t UCL	303.4		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE_MDL (whale creek***total dioxin/furan teq 1998 (fish)***tdioxfur****ng/kg)			
General Statistics			
Total Number of Observations	8	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	83.07	Mean	245.7
Maximum	547.8	Median	203
SD	159	Std. Error of Mean	56.23
Coefficient of Variation	0.647	Skewness	1.159
Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1			
Normal GOF Test			
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.818	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.245	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.283	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	352.2	95% Adjusted-CLT UCL (Chen-1995)	362.8
		95% Modified-t UCL (Johnson-1978)	356.1
Gamma GOF Test			
A-D Test Statistic	0.236	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.721	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.168	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.296	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3	k star (bias corrected MLE)	1.958
Theta hat (MLE)	81.89	Theta star (bias corrected MLE)	125.5
nu hat (MLE)	48	nu star (bias corrected)	31.33
MLE Mean (bias corrected)	245.7	MLE Sd (bias corrected)	175.6
		Approximate Chi Square Value (0.05)	19.54
Adjusted Level of Significance	0.0195	Adjusted Chi Square Value	17.23
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	393.9	95% Adjusted Gamma UCL (use when n<50)	446.8
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.973	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.818	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.136	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.283	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.42	Mean of logged Data	5.328
Maximum of Logged Data	6.306	SD of logged Data	0.635
Assuming Lognormal Distribution			
95% H-UCL	471	90% Chebyshev (MVUE) UCL	412.5
95% Chebyshev (MVUE) UCL	488.3	97.5% Chebyshev (MVUE) UCL	593.6
99% Chebyshev (MVUE) UCL	800.4		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	338.2	95% Jackknife UCL	352.2
95% Standard Bootstrap UCL	332	95% Bootstrap-t UCL	451
95% Hall's Bootstrap UCL	1001	95% Percentile Bootstrap UCL	335.4
95% BCA Bootstrap UCL	359.9		
90% Chebyshev(Mean, Sd) UCL	414.4	95% Chebyshev(Mean, Sd) UCL	490.8
97.5% Chebyshev(Mean, Sd) UCL	596.8	99% Chebyshev(Mean, Sd) UCL	805.1
Suggested UCL to Use			
95% Student's-t UCL	352.2		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE_MDL (whale creek***total pah (17)***tpah_17***t***ug/kg)

General Statistics			
Total Number of Observations	9		9
	Number of Missing Observations		0
Minimum	7790	Mean	26956
Maximum	39880	Median	30345
SD	10110	Std. Error of Mean	3370
Coefficient of Variation	0.375	Skewness	-0.788

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test	
Shapiro Wilk Test Statistic	0.947 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829 Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.187 Lilliefors GOF Test
5% Lilliefors Critical Value	0.274 Data appear Normal at 5% Significance Level
Data appear Normal at 5% Significance Level	

Assuming Normal Distribution			
95% Normal UCL	95% UCLs (Adjusted for Skewness)		
95% Student's-t UCL	33222	95% Adjusted-CLT UCL (Chen-1995)	31553
		95% Modified-t UCL (Johnson-1978)	33075

Gamma GOF Test	
A-D Test Statistic	0.515 Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.723 Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.22 Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.28 Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level	

Gamma Statistics			
k hat (MLE)	5.593	k star (bias corrected MLE)	3.803
Theta hat (MLE)	4819	Theta star (bias corrected MLE)	7088
nu hat (MLE)	100.7	nu star (bias corrected)	68.45
MLE Mean (bias corrected)	26956	MLE Sd (bias corrected)	13823
		Approximate Chi Square Value (0.05)	50.41
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value	47.16

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	36604	95% Adjusted Gamma UCL (use when n<50)	39127

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.831	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.241	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level
Data appear Lognormal at 5% Significance Level		

Lognormal Statistics			
Minimum of Logged Data	8.961	Mean of logged Data	10.11
Maximum of Logged Data	10.59	SD of logged Data	0.508

Assuming Lognormal Distribution			
95% H-UCL	41816	90% Chebyshev (MVUE) UCL	41728
95% Chebyshev (MVUE) UCL	48156	97.5% Chebyshev (MVUE) UCL	57079
99% Chebyshev (MVUE) UCL	74605		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs			
95% CLT UCL	32499	95% Jackknife UCL	33222
95% Standard Bootstrap UCL	32089	95% Bootstrap-t UCL	32221
95% Hall's Bootstrap UCL	31731	95% Percentile Bootstrap UCL	31900
95% BCA Bootstrap UCL	31467		
90% Chebyshev(Mean, Sd) UCL	37066	95% Chebyshev(Mean, Sd) UCL	41645
97.5% Chebyshev(Mean, Sd) UCL	48001	99% Chebyshev(Mean, Sd) UCL	60487

Suggested UCL to Use	
95% Student's-t UCL	33222

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.

RESULT_VALUE_MDL (whale creek***total pah (34)***tpah_34_nc***t***ug/kg)

General Statistics			
Total Number of Observations	9		9
	Number of Missing Observations		0
Minimum	19471	Mean	93121
Maximum	236740	Median	85006
SD	65586	Std. Error of Mean	21862
Coefficient of Variation	0.704	Skewness	1.431

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test	
Shapiro Wilk Test Statistic	0.883 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829 Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.247 Lilliefors GOF Test
5% Lilliefors Critical Value	0.274 Data appear Normal at 5% Significance Level
Data appear Normal at 5% Significance Level	

Assuming Normal Distribution			
95% Normal UCL	95% UCLs (Adjusted for Skewness)		
95% Student's-t UCL	133775	95% Adjusted-CLT UCL (Chen-1995)	140220

95% Modified-t UCL (Johnson-1978)		135512
Gamma GOF Test		
A-D Test Statistic	0.175	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.728	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.161	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.282	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	2.439	k star (bias corrected MLE)
Theta hat (MLE)	38174	Theta star (bias corrected MLE)
nu hat (MLE)	43.91	nu star (bias corrected)
MLE Mean (bias corrected)	93121	MLE Sd (bias corrected)
		Approximate Chi Square Value (0.05)
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	150242	95% Adjusted Gamma UCL (use when n<50)
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.983	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.132	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level
Data appear Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	9.877	Mean of logged Data
Maximum of Logged Data	12.37	SD of logged Data
Assuming Lognormal Distribution		
95% H-UCL	193750	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	196253	97.5% Chebyshev (MVUE) UCL
99% Chebyshev (MVUE) UCL	327189	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	129081	95% Jackknife UCL
95% Standard Bootstrap UCL	127151	95% Bootstrap-t UCL
95% Hall's Bootstrap UCL	347501	95% Percentile Bootstrap UCL
95% BCA Bootstrap UCL	138705	
90% Chebyshev(Mean, Sd) UCL	158707	95% Chebyshev(Mean, Sd) UCL
97.5% Chebyshev(Mean, Sd) UCL	229649	99% Chebyshev(Mean, Sd) UCL
Suggested UCL to Use		
95% Student's-t UCL	133775	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE_MDL (whale creek****total pcb (aroclor*1.75 and congener)****pcb_cong_aro175****mg/kg)		
General Statistics		
Total Number of Observations	9	Number of Distinct Observations
		Number of Missing Observations
Minimum	0.363	Mean
Maximum	3.358	Median
SD	0.846	Std. Error of Mean
Coefficient of Variation	0.621	Skewness
Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1		
Normal GOF Test		
Shapiro Wilk Test Statistic	0.826	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.286	Lilliefors GOF Test
5% Lilliefors Critical Value	0.274	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	1.886	95% Adjusted-CLT UCL (Chen-1995)
		95% Modified-t UCL (Johnson-1978)
Gamma GOF Test		
A-D Test Statistic	0.379	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.726	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.211	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.281	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	3.313	k star (bias corrected MLE)
Theta hat (MLE)	0.411	Theta star (bias corrected MLE)
nu hat (MLE)	59.64	nu star (bias corrected)
MLE Mean (bias corrected)	1.361	MLE Sd (bias corrected)
		Approximate Chi Square Value (0.05)
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50)	2.042	95% Adjusted Gamma UCL (use when n<50)
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.196	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level
Data appear Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-1.014	Mean of logged Data
Maximum of Logged Data	1.211	SD of logged Data
Assuming Lognormal Distribution		
95% H-UCL	2.38	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	2.604	97.5% Chebyshev (MVUE) UCL

99% Chebyshev (MVUE) UCL	4.191		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1.825	95% Jackknife UCL	1.886
95% Standard Bootstrap UCL	1.803	95% Bootstrap-t UCL	2.177
95% Hall's Bootstrap UCL	4.148	95% Percentile Bootstrap UCL	1.849
95% BCA Bootstrap UCL	1.947		
90% Chebyshev(Mean, Sd) UCL	2.207	95% Chebyshev(Mean, Sd) UCL	2.59
97.5% Chebyshev(Mean, Sd) UCL	3.122	99% Chebyshev(Mean, Sd) UCL	4.166
Suggested UCL to Use			
95% Adjusted Gamma UCL	2.232		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Enter # of Components to Run Name:					
		5			
C:\D_Drive\Jobs\newtown_creek\ProUCL\BERA\					
ProUCL_output_AREA_formatted					
Run Name					
RESULT_VALUE_MDL (cm 0 - 2***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)	cm 0 - 2	2,3,7,8-tetrachlorodiber	1746-01-6	t	ng/kg
RESULT_VALUE_MDL (cm 0 - 2***copper***7440-50-8***t***mg/kg)	cm 0 - 2	copper	7440-50-8	t	mg/kg
RESULT_VALUE_MDL (cm 0 - 2***cyanide***57-12-5***t***mg/kg)	cm 0 - 2	cyanide	57-12-5	t	mg/kg
RESULT_VALUE_MDL (cm 0 - 2***lead***7439-92-1***t***mg/kg)	cm 0 - 2	lead	7439-92-1	t	mg/kg
RESULT_VALUE_MDL (cm 0 - 2***total dioxin/furan teq 1998 (fish)***tdioxfurf***t***ng/kg)	cm 0 - 2	total dioxin/furan teq 1	tdioxfurf	t	ng/kg
RESULT_VALUE_MDL (cm 0 - 2***total pah (17)***tpah_17***t***ug/kg)	cm 0 - 2	total pah (17)	tpah_17	t	ug/kg
RESULT_VALUE_MDL (cm 0 - 2***total pah (34)***tpah_34_nc***t***ug/kg)	cm 0 - 2	total pah (34)	tpah_34_nc	t	ug/kg
RESULT_VALUE_MDL (cm 0 - 2***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)	cm 0 - 2	total pcb (aroclor*1.75	tpcb_cong_aro175	t	mg/kg
RESULT_VALUE_MDL (cm 2+***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)	cm 2+	2,3,7,8-tetrachlorodiber	1746-01-6	t	ng/kg
RESULT_VALUE_MDL (cm 2+***copper***7440-50-8***t***mg/kg)	cm 2+	copper	7440-50-8	t	mg/kg
RESULT_VALUE_MDL (cm 2+***cyanide***57-12-5***t***mg/kg)	cm 2+	cyanide	57-12-5	t	mg/kg
RESULT_VALUE_MDL (cm 2+***lead***7439-92-1***t***mg/kg)	cm 2+	lead	7439-92-1	t	mg/kg
RESULT_VALUE_MDL (cm 2+***total dioxin/furan teq 1998 (fish)***tdioxfurf***t***ng/kg)	cm 2+	total dioxin/furan teq 1	tdioxfurf	t	ng/kg
RESULT_VALUE_MDL (cm 2+***total pah (17)***tpah_17***t***ug/kg)	cm 2+	total pah (17)	tpah_17	t	ug/kg
RESULT_VALUE_MDL (cm 2+***total pah (34)***tpah_34_nc***t***ug/kg)	cm 2+	total pah (34)	tpah_34_nc	t	ug/kg
RESULT_VALUE_MDL (cm 2+***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)	cm 2+	total pcb (aroclor*1.75	tpcb_cong_aro175	t	mg/kg
RESULT_VALUE_MDL (dutch kills***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)	dutch kills	2,3,7,8-tetrachlorodiber	1746-01-6	t	ng/kg
RESULT_VALUE_MDL (dutch kills***copper***7440-50-8***t***mg/kg)	dutch kills	copper	7440-50-8	t	mg/kg
RESULT_VALUE_MDL (dutch kills***cyanide***57-12-5***t***mg/kg)	dutch kills	cyanide	57-12-5	t	mg/kg
RESULT_VALUE_MDL (dutch kills***lead***7439-92-1***t***mg/kg)	dutch kills	lead	7439-92-1	t	mg/kg
RESULT_VALUE_MDL (dutch kills***total dioxin/furan teq 1998 (fish)***tdioxfurf***t***ng/kg)	dutch kills	total dioxin/furan teq 1	tdioxfurf	t	ng/kg
RESULT_VALUE_MDL (dutch kills***total pah (17)***tpah_17***t***ug/kg)	dutch kills	total pah (17)	tpah_17	t	ug/kg
RESULT_VALUE_MDL (dutch kills***total pah (34)***tpah_34_nc***t***ug/kg)	dutch kills	total pah (34)	tpah_34_nc	t	ug/kg
RESULT_VALUE_MDL (dutch kills***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)	dutch kills	total pcb (aroclor*1.75	tpcb_cong_aro175	t	mg/kg
RESULT_VALUE_MDL (east branch***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)	east branch	2,3,7,8-tetrachlorodiber	1746-01-6	t	ng/kg
RESULT_VALUE_MDL (east branch***copper***7440-50-8***t***mg/kg)	east branch	copper	7440-50-8	t	mg/kg
RESULT_VALUE_MDL (east branch***cyanide***57-12-5***t***mg/kg)	east branch	cyanide	57-12-5	t	mg/kg
RESULT_VALUE_MDL (east branch***lead***7439-92-1***t***mg/kg)	east branch	lead	7439-92-1	t	mg/kg
RESULT_VALUE_MDL (east branch***total dioxin/furan teq 1998 (fish)***tdioxfurf***t***ng/kg)	east branch	total dioxin/furan teq 1	tdioxfurf	t	ng/kg
RESULT_VALUE_MDL (east branch***total pah (17)***tpah_17***t***ug/kg)	east branch	total pah (17)	tpah_17	t	ug/kg

RESULT_VALUE_MDL (east branch***total pah (34)***tpah_34_nc***t***ug/kg)	east branch	total pah (34)	tpah_34_nc	t	ug/kg
RESULT_VALUE_MDL (east branch***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)	east branch	total pcb (aroclor*1.75 : tpcb_cong_aro175		t	mg/kg
RESULT_VALUE_MDL (english kills***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)	english kills	2,3,7,8-tetrachlorodiber 1746-01-6		t	ng/kg
RESULT_VALUE_MDL (english kills***copper***7440-50-8***t***mg/kg)	english kills	copper	7440-50-8	t	mg/kg
RESULT_VALUE_MDL (english kills***cyanide***57-12-5***t***mg/kg)	english kills	cyanide	57-12-5	t	mg/kg
RESULT_VALUE_MDL (english kills***lead***7439-92-1***t***mg/kg)	english kills	lead	7439-92-1	t	mg/kg
RESULT_VALUE_MDL (english kills***total dioxin/furan teq 1998 (fish)***tdioxfurf***t***ng/kg)	english kills	total dioxin/furan teq 15 tdioxfurf		t	ng/kg
RESULT_VALUE_MDL (english kills***total pah (17)***tpah_17***t***ug/kg)	english kills	total pah (17)	tpah_17	t	ug/kg
RESULT_VALUE_MDL (english kills***total pah (34)***tpah_34_nc***t***ug/kg)	english kills	total pah (34)	tpah_34_nc	t	ug/kg
RESULT_VALUE_MDL (english kills***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)	english kills	total pcb (aroclor*1.75 : tpcb_cong_aro175		t	mg/kg
RESULT_VALUE_MDL (maspeth creek***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)	maspeth creek	2,3,7,8-tetrachlorodiber 1746-01-6		t	ng/kg
RESULT_VALUE_MDL (maspeth creek***copper***7440-50-8***t***mg/kg)	maspeth creek	copper	7440-50-8	t	mg/kg
RESULT_VALUE_MDL (maspeth creek***cyanide***57-12-5***t***mg/kg)	maspeth creek	cyanide	57-12-5	t	mg/kg
RESULT_VALUE_MDL (maspeth creek***lead***7439-92-1***t***mg/kg)	maspeth creek	lead	7439-92-1	t	mg/kg
RESULT_VALUE_MDL (maspeth creek***total dioxin/furan teq 1998 (fish)***tdioxfurf***t***ng/kg)	maspeth creek	total dioxin/furan teq 15 tdioxfurf		t	ng/kg
RESULT_VALUE_MDL (maspeth creek***total pah (17)***tpah_17***t***ug/kg)	maspeth creek	total pah (17)	tpah_17	t	ug/kg
RESULT_VALUE_MDL (maspeth creek***total pah (34)***tpah_34_nc***t***ug/kg)	maspeth creek	total pah (34)	tpah_34_nc	t	ug/kg
RESULT_VALUE_MDL (maspeth creek***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)	maspeth creek	total pcb (aroclor*1.75 : tpcb_cong_aro175		t	mg/kg
RESULT_VALUE_MDL (whale creek***2,3,7,8-tetrachlorodibenzo-p-dioxin (tcdd)***1746-01-6***t***ng/kg)	whale creek	2,3,7,8-tetrachlorodiber 1746-01-6		t	ng/kg
RESULT_VALUE_MDL (whale creek***copper***7440-50-8***t***mg/kg)	whale creek	copper	7440-50-8	t	mg/kg
RESULT_VALUE_MDL (whale creek***cyanide***57-12-5***t***mg/kg)	whale creek	cyanide	57-12-5	t	mg/kg
RESULT_VALUE_MDL (whale creek***lead***7439-92-1***t***mg/kg)	whale creek	lead	7439-92-1	t	mg/kg
RESULT_VALUE_MDL (whale creek***total dioxin/furan teq 1998 (fish)***tdioxfurf***t***ng/kg)	whale creek	total dioxin/furan teq 15 tdioxfurf		t	ng/kg
RESULT_VALUE_MDL (whale creek***total pah (17)***tpah_17***t***ug/kg)	whale creek	total pah (17)	tpah_17	t	ug/kg
RESULT_VALUE_MDL (whale creek***total pah (34)***tpah_34_nc***t***ug/kg)	whale creek	total pah (34)	tpah_34_nc	t	ug/kg
RESULT_VALUE_MDL (whale creek***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)	whale creek	total pcb (aroclor*1.75 : tpcb_cong_aro175		t	mg/kg

UCL Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	12/27/2016 15:49
From File	surfsed_comb_20161222_wupdPCB_NatGrid06_wcorrectedTOC_SA_161227_RISK.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

RESULT_VALUE (studyarea***1,2-dichlorobenzene***95-50-1***t***mg/kg (at 1% toc))

General Statistics

Total Number of Observations	172	Number of Distinct Observations	166
Number of Detects	9	Number of Non-Detects	163
Number of Distinct Detects	9	Number of Distinct Non-Detects	158
Minimum Detect	7.00E-05	Minimum Non-Detect	1.06E-03
Maximum Detect	0.00923	Maximum Non-Detect	0.383
Variance Detects	1.36E-05	Percent Non-Detects	94.77%
Mean Detects	0.00256	SD Detects	0.00368
Median Detects	2.38E-04	CV Detects	1.439
Skewness Detects	1.389	Kurtosis Detects	0.307
Mean of Logged Detects	-7.307	SD of Logged Detects	1.891

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.705	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.291	Lilliefors GOF Test
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level
Detected Data appear Approximate Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	3.62E-04	Standard Error of Mean	1.11E-04
SD	0.00109	95% KM (BCA) UCL	5.81E-04
95% KM (t) UCL	5.46E-04	95% KM (Percentile Bootstrap) UCL	5.54E-04
95% KM (z) UCL	5.45E-04	95% KM Bootstrap t UCL	6.27E-04
90% KM Chebyshev UCL	6.95E-04	95% KM Chebyshev UCL	8.46E-04
97.5% KM Chebyshev UCL	0.00106	99% KM Chebyshev UCL	0.00147

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.702	Anderson-Darling GOF Test
5% A-D Critical Value	0.775	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.304	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.295	Detected Data Not Gamma Distributed at 5% Significance Level
Detected data follow Appr. Gamma Distribution at 5% Significance Level		

Gamma Statistics on Detected Data Only

k hat (MLE)	0.478	k star (bias corrected MLE)	0.393
Theta hat (MLE)	0.00536	Theta star (bias corrected MLE)	0.00652
nu hat (MLE)	8.598	nu star (bias corrected)	7.066
MLE Mean (bias corrected)	0.00256	MLE Sd (bias corrected)	0.00408

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.111	nu hat (KM)	38.17
Approximate Chi Square Value (38.17, α)	25.02	Adjusted Chi Square Value (38.17, β)	24.93
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	5.52E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	5.54E-04

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.00E-05	Mean	0.00961
Maximum	1.00E-02	Median	0.01
SD	0.00184	CV	0.192
k hat (MLE)	5.078	k star (bias corrected MLE)	4.993
Theta hat (MLE)	0.00189	Theta star (bias corrected MLE)	0.00192
nu hat (MLE)	1747	nu star (bias corrected)	1718
MLE Mean (bias corrected)	0.00961	MLE Sd (bias corrected)	0.0043
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (N/A, α)	1622	Adjusted Chi Square Value (N/A, β)	1622
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0102	95% Gamma Adjusted UCL (use when $n < 50$)	0.0102

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.872	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.264	Lilliefors GOF Test
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3.04E-04	Mean in Log Scale	-8.567
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SD in Original Scale	9.58E-04	SD in Log Scale	0.526
95% t UCL (assumes normality of ROS data)	4.25E-04	95% Percentile Bootstrap UCL	4.35E-04
95% BCA Bootstrap UCL	5.06E-04	95% Bootstrap t UCL	8.55E-04
95% H-UCL (Log ROS)	2.35E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.653	95% H-UCL (KM -Log)	2.77E-04
KM SD (logged)	0.818	95% Critical H Value (KM-Log)	2.018
KM Standard Error of Mean (logged)	0.214		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0124	Mean in Log Scale	-6.053
SD in Original Scale	0.0274	SD in Log Scale	1.579
95% t UCL (Assumes normality)	0.0159	95% H-Stat UCL	0.0114
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	5.46E-04	95% KM (Percentile Bootstrap) UCL	5.54E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***1,2-dichlorobenzene***95-50-1***t***ug/kg)			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	51
Number of Detects	9	Number of Non-Detects	#####
Number of Distinct Detects	9	Number of Distinct Non-Detects	43
Minimum Detect	0.85	Minimum Non-Detect	760.00%
Maximum Detect	180	Maximum Non-Detect	3600
Variance Detects	4313	Percent Non-Detects	94.77%
Mean Detects	38.14	SD Detects	65.68
Median Detects	3.3	CV Detects	172.20%
Skewness Detects	1.777	Kurtosis Detects	2.045
Mean of Logged Detects	1.978	SD of Logged Detects	1.993
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.647	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.35	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.944	Standard Error of Mean	1.788
SD	17.87	95% KM (BCA) UCL	8.268
95% KM (t) UCL	7.901	95% KM (Percentile Bootstrap) UCL	8.047
95% KM (z) UCL	7.885	95% KM Bootstrap t UCL	11.39
90% KM Chebyshev UCL	10.31	95% KM Chebyshev UCL	12.74
97.5% KM Chebyshev UCL	16.11	99% KM Chebyshev UCL	22.73
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.818	Anderson-Darling GOF Test	
5% A-D Critical Value	0.79	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.28	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.298	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.396	k star (bias corrected MLE)	0.338
Theta hat (MLE)	96.25	Theta star (bias corrected MLE)	112.8
nu hat (MLE)	7.132	nu star (bias corrected)	6.088
MLE Mean (bias corrected)	38.14	MLE Sd (bias corrected)	65.58
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0766	nu hat (KM)	26.35
Approximate Chi Square Value (26.35, α)	15.65	Adjusted Chi Square Value (26.35, β)	15.58
95% Gamma Approximate KM-UCL (use when n>=50)	8.326	95% Gamma Adjusted KM-UCL (use when n<50)	8.363
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			

Minimum	0.01	Mean	6.287
Maximum	180	Median	0.01
SD	18.6	CV	2.959
k hat (MLE)	0.185	k star (bias corrected MLE)	0.185
Theta hat (MLE)	34.06	Theta star (bias corrected MLE)	33.94
nu hat (MLE)	63.5	nu star (bias corrected)	63.73
MLE Mean (bias corrected)	6.287	MLE Sd (bias corrected)	14.61
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (63.73, α)	46.36	Adjusted Chi Square Value (63.73, β)	46.24
95% Gamma Approximate UCL (use when n>=50)	8.642	95% Gamma Adjusted UCL (use when n<50)	8.665

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.883	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.209	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	5.47	Mean in Log Scale	0.892
SD in Original Scale	16.6	SD in Log Scale	1.092
95% t UCL (assumes normality of ROS data)	7.563	95% Percentile Bootstrap UCL	7.876
95% BCA Bootstrap UCL	8.826	95% Bootstrap t UCL	12.7
95% H-UCL (Log ROS)	5.344		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	0.832	95% H-UCL (KM -Log)	3.838
KM SD (logged)	0.868	95% Critical H Value (KM-Log)	2.056
KM Standard Error of Mean (logged)	0.295		

DL/2 Statistics

DL/2 Normal	DL/2 Log-Transformed		
Mean in Original Scale	127.5	Mean in Log Scale	2.877
SD in Original Scale	288.5	SD in Log Scale	1.709
95% t UCL (Assumes normality)	163.9	95% H-Stat UCL	111.3

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	7.901	95% GROS Approximate Gamma UCL	8.642
95% Approximate Gamma KM-UCL	8.326		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***1,2-dichloroethene, cis-***156-59-2***t***mg/kg (at 1% toc))

General Statistics

Total Number of Observations	172	Number of Distinct Observations	#####
Number of Detects	14	Number of Non-Detects	158
Number of Distinct Detects	14	Number of Distinct Non-Detects	147
Minimum Detect	1.11E-04	Minimum Non-Detect	1.60E-04
Maximum Detect	4.50E-04	Maximum Non-Detect	0.156
Variance Detects	1.06E-08	Percent Non-Detects	91.86%
Mean Detects	1.90E-04	SD Detects	1.03E-04
Median Detects	1.26E-04	CV Detects	0.543
Skewness Detects	1.487	Kurtosis Detects	1.761
Mean of Logged Detects	-8.68	SD of Logged Detects	0.467

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.776	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.302	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	1.57E-04	Standard Error of Mean	1.40E-05
SD	6.91E-05	95% KM (BCA) UCL	1.78E-04
95% KM (t) UCL	1.80E-04	95% KM (Percentile Bootstrap) UCL	1.80E-04
95% KM (z) UCL	1.80E-04	95% KM Bootstrap t UCL	1.87E-04
90% KM Chebyshev UCL	1.99E-04	95% KM Chebyshev UCL	2.18E-04
97.5% KM Chebyshev UCL	2.44E-04	99% KM Chebyshev UCL	2.96E-04

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.178	Anderson-Darling GOF Test	
5% A-D Critical Value	0.739	Detected Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.317	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.229	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	4.64	k star (bias corrected MLE)	3.693
Theta hat (MLE)	4.10E-05	Theta star (bias corrected MLE)	5.15E-05
nu hat (MLE)	129.9	nu star (bias corrected)	103.4
MLE Mean (bias corrected)	1.90E-04	MLE Sd (bias corrected)	9.89E-05
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	5.15	nu hat (KM)	1771
Approximate Chi Square Value (N/A, α)	1675	Adjusted Chi Square Value (N/A, β)	1674
95% Gamma Approximate KM-UCL (use when n>=50)	1.66E-04	95% Gamma Adjusted KM-UCL (use when n<50)	1.66E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.11E-04	Mean	0.0092
Maximum	0.01	Median	0.01
SD	0.00269	CV	0.292
k hat (MLE)	2.164	k star (bias corrected MLE)	2.131
Theta hat (MLE)	4.25E-03	Theta star (bias corrected MLE)	4.32E-03
nu hat (MLE)	744.5	nu star (bias corrected)	732.9
MLE Mean (bias corrected)	0.0092	MLE Sd (bias corrected)	0.0063
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (732.89, α)	671.1	Adjusted Chi Square Value (732.89, β)	670.6
95% Gamma Approximate UCL (use when n>=50)	0.01	95% Gamma Adjusted UCL (use when n<50)	0.0101
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.825	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.308	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.50E-04	Mean in Log Scale	-8.816
SD in Original Scale	3.22E-05	SD in Log Scale	0.15
95% t UCL (assumes normality of ROS data)	1.55E-04	95% Percentile Bootstrap UCL	1.55E-04
95% BCA Bootstrap UCL	1.57E-04	95% Bootstrap t UCL	1.57E-04
95% H-UCL (Log ROS)	1.53E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00791	Mean in Log Scale	-7.376
SD in Original Scale	0.0193	SD in Log Scale	1.947
95% t UCL (Assumes normality)	0.0104	95% H-Stat UCL	0.00665
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.80E-04	95% KM (% Bootstrap) UCL	1.80E-04
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***1,2-dichloroethene, cis-***156-59-2***t***ug/kg)			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	65
Number of Detects	14	Number of Non-Detects	15800%
Number of Distinct Detects	11	Number of Distinct Non-Detects	58
Minimum Detect	1	Minimum Non-Detect	1.7
Maximum Detect	5.6	Maximum Non-Detect	1700
Variance Detects	1.553	Percent Non-Detects	91.86%
Mean Detects	2.136	SD Detects	124.60%
Median Detects	1.8	CV Detects	0.584
Skewness Detects	1.85	Kurtosis Detects	3.895
Mean of Logged Detects	0.635	SD of Logged Detects	0.492
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.797	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.202	Lilliefors GOF Test	

5% Lilliefors Critical Value	0.237	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.559	Standard Error of Mean	0.113
SD	0.604	95% KM (BCA) UCL	1.74
95% KM (t) UCL	1.746	95% KM (Percentile Bootstrap) UCL	1.745
95% KM (z) UCL	1.745	95% KM Bootstrap t UCL	1.793
90% KM Chebyshev UCL	1.898	95% KM Chebyshev UCL	2.052
97.5% KM Chebyshev UCL	2.265	99% KM Chebyshev UCL	2.684
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.599	Anderson-Darling GOF Test	
5% A-D Critical Value	0.74	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.197	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.23	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	4.195	k star (bias corrected MLE)	3.344
Theta hat (MLE)	0.509	Theta star (bias corrected MLE)	0.639
nu hat (MLE)	1.18E+02	nu star (bias corrected)	9.36E+01
MLE Mean (bias corrected)	2.136	MLE Sd (bias corrected)	1.168
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	6.65E+00	nu hat (KM)	2289
Approximate Chi Square Value (N/A, α)	2179	Adjusted Chi Square Value (N/A, β)	2178
95% Gamma Approximate KM-UCL (use when n>=50)	1.638	95% Gamma Adjusted KM-UCL (use when n<50)	1.638
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.508	Mean	1.498
Maximum	5.6	Median	1.425
SD	0.582	CV	0.389
k hat (MLE)	8.161	k star (bias corrected MLE)	8.02E+00
Theta hat (MLE)	0.184	Theta star (bias corrected MLE)	0.187
nu hat (MLE)	2807	nu star (bias corrected)	2760
MLE Mean (bias corrected)	1.498	MLE Sd (bias corrected)	0.529
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (N/A, α)	2639	Adjusted Chi Square Value (N/A, β)	2638
95% Gamma Approximate UCL (use when n>=50)	1.566	95% Gamma Adjusted UCL (use when n<50)	1.567
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.924	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.874	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.237	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.547	Mean in Log Scale	0.396
SD in Original Scale	0.511	SD in Log Scale	0.271
95% t UCL (assumes normality of ROS data)	1.612	95% Percentile Bootstrap UCL	1.614
95% BCA Bootstrap UCL	1.627	95% Bootstrap t UCL	1.623
95% H-UCL (Log ROS)	1.598		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	0.391	95% H-UCL (KM -Log)	1.612
KM SD (logged)	0.305	95% Critical H Value (KM-Log)	1.723
KM Standard Error of Mean (logged)	0.0689		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	80.57	Mean in Log Scale	1.554
SD in Original Scale	194.2	SD in Log Scale	2.1
95% t UCL (Assumes normality)	1.05E+02	95% H-Stat UCL	72.98
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.746	95% KM (Percentile Bootstrap) UCL	1.745

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***1,4-dichlorobenzene***106-46-7***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	172	Number of Distinct Observations 165
Number of Detects	42	Number of Non-Detects 130
Number of Distinct Detects	40	Number of Distinct Non-Detects 125
Minimum Detect	1.20E-04	Minimum Non-Detect 8.00E-04
Maximum Detect	0.0759	Maximum Non-Detect 0.383
Variance Detects	1.77E-04	Percent Non-Detects 75.58%
Mean Detects	4.34E-03	SD Detects 0.0133
Median Detects	4.81E-04	CV Detects 3.063
Skewness Detects	4.597	Kurtosis Detects 22.41
Mean of Logged Detects	-7.146	SD of Logged Detects 1.538
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.353	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.402	Lilliefors GOF Test
5% Lilliefors Critical Value	0.137	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00166	Standard Error of Mean 6.13E-04
SD	0.00727	95% KM (BCA) UCL 0.00283
95% KM (t) UCL	0.00268	95% KM (Percentile Bootstrap) UCL 0.0028
95% KM (z) UCL	0.00267	95% KM Bootstrap t UCL 0.00547
90% KM Chebyshev UCL	0.0035	95% KM Chebyshev UCL 0.00433
97.5% KM Chebyshev UCL	0.00549	99% KM Chebyshev UCL 0.00776
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	5.125	Anderson-Darling GOF Test
5% A-D Critical Value	0.839	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.27	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.146	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.388	k star (bias corrected MLE) 37.60%
Theta hat (MLE)	0.0112	Theta star (bias corrected MLE) 0.0116
nu hat (MLE)	32.55	nu star (bias corrected) 31.56
MLE Mean (bias corrected)	0.00434	MLE Sd (bias corrected) 0.00708
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0522	nu hat (KM) 17.96
Approximate Chi Square Value (17.96, α)	9.365	Adjusted Chi Square Value (17.96, β) 9.313
95% Gamma Approximate KM-UCL (use when n>=50)	0.00319	95% Gamma Adjusted KM-UCL (use when n<50) 0.00321
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	1.20E-04	Mean 0.00862
Maximum	0.0759	Median 0.01
SD	0.00695	CV 0.807
k hat (MLE)	1.199	k star (bias corrected MLE) 1.182
Theta hat (MLE)	0.00719	Theta star (bias corrected MLE) 0.00729
nu hat (MLE)	412.5	nu star (bias corrected) 406.6
MLE Mean (bias corrected)	0.00862	MLE Sd (bias corrected) 0.00793
		Adjusted Level of Significance (β) 0.0486
Approximate Chi Square Value (406.61, α)	360.9	Adjusted Chi Square Value (406.61, β) 360.5
95% Gamma Approximate UCL (use when n>=50)	0.00971	95% Gamma Adjusted UCL (use when n<50) 0.00972
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.847	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.159	Lilliefors GOF Test
5% Lilliefors Critical Value	0.137	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00144	Mean in Log Scale -7.505
SD in Original Scale	0.00672	SD in Log Scale 0.792
95% t UCL (assumes normality of ROS data)	0.00228	95% Percentile Bootstrap UCL 0.00234
95% BCA Bootstrap UCL	0.00292	95% Bootstrap t UCL 0.00525
95% H-UCL (Log ROS)	8.50E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed

Mean in Original Scale	0.0127	Mean in Log Scale	-6.095
SD in Original Scale	0.0276	SD in Log Scale	1.685
95% t UCL (Assumes normality)	0.0162	95% H-Stat UCL	0.0134
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (Chebyshev) UCL	0.00433

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***1,4-dichlorobenzene***106-46-7***t***ug/kg)

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	69
Number of Detects	42	Number of Non-Detects	130
Number of Distinct Detects	37	Number of Distinct Non-Detects	37
Minimum Detect	1	Minimum Non-Detect	7.6
Maximum Detect	1200	Maximum Non-Detect	3600
Variance Detects	38248	Percent Non-Detects	75.58%
Mean Detects	58.35	SD Detects	195.6
Median Detects	5.45	CV Detects	3.351
Skewness Detects	5.263	Kurtosis Detects	29.93
Mean of Logged Detects	2.139	SD of Logged Detects	1.639

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.325 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.942 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.415 Lilliefors GOF Test
5% Lilliefors Critical Value	0.137 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	19.71	Standard Error of Mean	8.382
SD	103.1	95% KM (BCA) UCL	36.3
95% KM (t) UCL	33.57	95% KM (Percentile Bootstrap) UCL	34.66
95% KM (z) UCL	33.49	95% KM Bootstrap t UCL	69.23
90% KM Chebyshev UCL	44.85	95% KM Chebyshev UCL	56.24
97.5% KM Chebyshev UCL	72.05	99% KM Chebyshev UCL	103.1

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	5.451 Anderson-Darling GOF Test
5% A-D Critical Value	0.848 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.313 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.147 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.349	k star (bias corrected MLE)	34%
Theta hat (MLE)	167.2	Theta star (bias corrected MLE)	171.7
nu hat (MLE)	29.31	nu star (bias corrected)	28.55
MLE Mean (bias corrected)	58.35	MLE Sd (bias corrected)	100.1

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0365	nu hat (KM)	12.56
Approximate Chi Square Value (12.56, α)	5.601	Adjusted Chi Square Value (12.56, β)	5.562
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	44.21	95% Gamma Adjusted KM-UCL (use when $n < 50$)	44.52
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	19.21
Maximum	1200	Median	0.01
SD	99.69	CV	5.19
k hat (MLE)	0.158	k star (bias corrected MLE)	0.159
Theta hat (MLE)	121.4	Theta star (bias corrected MLE)	120.6
nu hat (MLE)	54.41	nu star (bias corrected)	54.8
MLE Mean (bias corrected)	19.21	MLE Sd (bias corrected)	48.13
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (54.80, α)	38.79	Adjusted Chi Square Value (54.80, β)	38.67
95% Gamma Approximate UCL (use when $n \geq 50$)	27.14	95% Gamma Adjusted UCL (use when $n < 50$)	27.22

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.852	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.942	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.151	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.137	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	18.88	Mean in Log Scale	1.645
SD in Original Scale	98.47	SD in Log Scale	1.122
95% t UCL (assumes normality of ROS data)	31.29	95% Percentile Bootstrap UCL	34.2
95% BCA Bootstrap UCL	40.65	95% Bootstrap t UCL	69.23
95% H-UCL (Log ROS)	11.83		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	132.4	Mean in Log Scale	2.834
SD in Original Scale	291.8	SD in Log Scale	1.815
95% t UCL (Assumes normality)	169.2	95% H-Stat UCL	133.7
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	56.24		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***1-methyldibenzothiophene***31317-07-4***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	287
Number of Detects	299	Number of Non-Detects	1
Number of Distinct Detects	286	Number of Distinct Non-Detects	1
Minimum Detect	0.00148	Minimum Non-Detect	0.0402
Maximum Detect	0.231	Maximum Non-Detect	0.0402
Variance Detects	9.19E-04	Percent Non-Detects	0.33%
Mean Detects	0.0195	SD Detects	0.0303
Median Detects	0.00858	CV Detects	1.556
Skewness Detects	3.867	Kurtosis Detects	17.34
Mean of Logged Detects	-4.494	SD of Logged Detects	0.932
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.531	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0195	Standard Error of Mean	0.00175
SD	0.0302	95% KM (BCA) UCL	0.0225
95% KM (t) UCL	0.0223	95% KM (Percentile Bootstrap) UCL	0.0224
95% KM (z) UCL	0.0223	95% KM Bootstrap t UCL	0.0229
90% KM Chebyshev UCL	0.0247	95% KM Chebyshev UCL	0.0271
97.5% KM Chebyshev UCL	0.0304	99% KM Chebyshev UCL	0.0368
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	16.8	Anderson-Darling GOF Test	
5% A-D Critical Value	0.783	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.162	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0538	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.034	k star (bias corrected MLE)	1.026
Theta hat (MLE)	0.0188	Theta star (bias corrected MLE)	0.019
nu hat (MLE)	618.6	nu star (bias corrected)	613.7
MLE Mean (bias corrected)	0.0195	MLE Sd (bias corrected)	0.0192
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.414	nu hat (KM)	#####
Approximate Chi Square Value (248.56, α)	213.1	Adjusted Chi Square Value (248.56, β)	212.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.0227	95% Gamma Adjusted KM-UCL (use when n<50)	0.0227
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			

For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00148 Mean	0.0195
Maximum	0.231 Median	0.00866
SD	0.0303 CV	1.556
k hat (MLE)	1.037 k star (bias corrected MLE)	1.028
Theta hat (MLE)	0.0188 Theta star (bias corrected MLE)	0.0189
nu hat (MLE)	621.9 nu star (bias corrected)	617
MLE Mean (bias corrected)	0.0195 MLE Sd (bias corrected)	0.0192
	Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (617.02, α)	560.4 Adjusted Chi Square Value (617.02, β)	560.1
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0214 95% Gamma Adjusted UCL (use when $n < 50$)	0.0214
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.113 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0195 Mean in Log Scale	-4.494
SD in Original Scale	0.0303 SD in Log Scale	0.93
95% t UCL (assumes normality of ROS data)	0.0223 95% Percentile Bootstrap UCL	0.0226
95% BCA Bootstrap UCL	0.0232 95% Bootstrap t UCL	0.0231
95% H-UCL (Log ROS)	0.0193	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.0195 Mean in Log Scale	-4.492
SD in Original Scale	0.0303 SD in Log Scale	0.931
95% t UCL (Assumes normality)	0.0224 95% H-Stat UCL	0.0193
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.0225	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***1-methyldibenzothiophene***31317-07-4***t***ug/kg)		
General Statistics		
Total Number of Observations	300 Number of Distinct Observations	264
Number of Detects	299 Number of Non-Detects	1
Number of Distinct Detects	263 Number of Distinct Non-Detects	1
Minimum Detect	3.16 Minimum Non-Detect	219
Maximum Detect	4060 Maximum Non-Detect	219
Variance Detects	187344 Percent Non-Detects	0.33%
Mean Detects	202.3 SD Detects	432.8
Median Detects	74.1 CV Detects	2.14
Skewness Detects	5.388 Kurtosis Detects	35.78
Mean of Logged Detects	4.409 SD of Logged Detects	1.232
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.443 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.323 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	201.9 Standard Error of Mean	24.95
SD	431.5 95% KM (BCA) UCL	244.5
95% KM (t) UCL	243 95% KM (Percentile Bootstrap) UCL	246.9
95% KM (z) UCL	242.9 95% KM Bootstrap t UCL	256.3
90% KM Chebyshev UCL	276.7 95% KM Chebyshev UCL	310.6
97.5% KM Chebyshev UCL	357.7 99% KM Chebyshev UCL	450.1
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	13.56 Anderson-Darling GOF Test	
5% A-D Critical Value	0.804 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.146 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0546 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.674 k star (bias corrected MLE)	0.67

Theta hat (MLE)	300.1	Theta star (bias corrected MLE)	302.1
nu hat (MLE)	403.2	nu star (bias corrected)	400.5
MLE Mean (bias corrected)	202.3	MLE Sd (bias corrected)	247.2
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.219	nu hat (KM)	131.3
Approximate Chi Square Value (131.33, α)	105.9	Adjusted Chi Square Value (131.33, β)	105.7
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	250.4	95% Gamma Adjusted KM-UCL (use when $n < 50$)	250.7
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	3.16	Mean	201.6
Maximum	4060	Median	73.95
SD	432.3	CV	2.144
k hat (MLE)	0.67	k star (bias corrected MLE)	0.665
Theta hat (MLE)	301	Theta star (bias corrected MLE)	303
nu hat (MLE)	401.9	nu star (bias corrected)	399.3
MLE Mean (bias corrected)	201.6	MLE Sd (bias corrected)	247.2
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (399.25, α)	353.9	Adjusted Chi Square Value (399.25, β)	353.7
95% Gamma Approximate UCL (use when $n \geq 50$)	227.5	95% Gamma Adjusted UCL (use when $n < 50$)	227.6
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0505	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	201.8	Mean in Log Scale	4.408
SD in Original Scale	432.2	SD in Log Scale	1.23
95% t UCL (assumes normality of ROS data)	243	95% Percentile Bootstrap UCL	244.9
95% BCA Bootstrap UCL	253	95% Bootstrap t UCL	252.3
95% H-UCL (Log ROS)	206.5		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.407	95% H-UCL (KM -Log)	206.2
KM SD (logged)	1.229	95% Critical H Value (KM-Log)	2.338
KM Standard Error of Mean (logged)	0.0711		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	202	Mean in Log Scale	4.41
SD in Original Scale	432.1	SD in Log Scale	1.23
95% t UCL (Assumes normality)	243.2	95% H-Stat UCL	206.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	310.6		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***1-methylnaphthalene***90-12-0***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	332
		Number of Missing Observations	0
Minimum	0.004	Mean	0.0519
Maximum	1.303	Median	0.0255
SD	0.128	Std. Error of Mean	0.007
Coefficient of Variation	2.467	Skewness	7.163
Normal GOF Test			
Shapiro Wilk Test Statistic	0.298	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.366	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0484	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.0635	95% Adjusted-CLT UCL (Chen-1995)	0.0664

	95% Modified-t UCL (Johnson-1978)	0.0639
Gamma GOF Test		
A-D Test Statistic	34.08 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.786 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.234 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0512 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	0.962 k star (bias corrected MLE)	0.956
Theta hat (MLE)	0.054 Theta star (bias corrected MLE)	0.0543
nu hat (MLE)	644.9 nu star (bias corrected)	640.4
MLE Mean (bias corrected)	0.0519 MLE Sd (bias corrected)	0.0531
	Approximate Chi Square Value (0.05)	582.7
Adjusted Level of Significance	0.0493 Adjusted Chi Square Value	582.5
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	0.0571 95% Adjusted Gamma UCL (use when n<50)	0.0571
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.878 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0 Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.118 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0484 Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-5.521 Mean of logged Data	-3.56
Maximum of Logged Data	0.265 SD of logged Data	0.83
Assuming Lognormal Distribution		
95% H-UCL	0.0439 90% Chebyshev (MVUE) UCL	4.64%
95% Chebyshev (MVUE) UCL	0.0492 97.5% Chebyshev (MVUE) UCL	0.0532
99% Chebyshev (MVUE) UCL	0.0609	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	0.0635 95% Jackknife UCL	0.0635
95% Standard Bootstrap UCL	0.0634 95% Bootstrap-t UCL	0.0698
95% Hall's Bootstrap UCL	0.0678 95% Percentile Bootstrap UCL	0.0637
95% BCA Bootstrap UCL	0.0669	
90% Chebyshev(Mean, Sd) UCL	0.0729 95% Chebyshev(Mean, Sd) UCL	0.0825
97.5% Chebyshev(Mean, Sd) UCL	0.0957 99% Chebyshev(Mean, Sd) UCL	0.122
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	0.0825	
<p>Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.</p>		
<p>RESULT_VALUE (studyarea***1-methylnaphthalene***90-12-0***t***ug/kg)</p>		
General Statistics		
Total Number of Observations	335 Number of Distinct Observations	248
	Number of Missing Observations	0
Minimum	22.4 Mean	503.4
Maximum	18500 Median	180
SD	1573 Std. Error of Mean	85.92
Coefficient of Variation	3.124 Skewness	7.596
Normal GOF Test		
Shapiro Wilk Test Statistic	0.277 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.381 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0484 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	645.1 95% Adjusted-CLT UCL (Chen-1995)	682.8
	95% Modified-t UCL (Johnson-1978)	651.1
Gamma GOF Test		
A-D Test Statistic	36.65 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.803 Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.231	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0519	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.687	k star (bias corrected MLE)	0.683
Theta hat (MLE)	732.7	Theta star (bias corrected MLE)	737.1
nu hat (MLE)	460.4	nu star (bias corrected)	457.6
MLE Mean (bias corrected)	503.4	MLE Sd (bias corrected)	609.2
		Approximate Chi Square Value (0.05)	409
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	408.8
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	563.2	95% Adjusted Gamma UCL (use when n<50)	563.5
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.889	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.101	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0484	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.109	Mean of logged Data	5.34
Maximum of Logged Data	9.826	SD of logged Data	0.993
Assuming Lognormal Distribution			
95% H-UCL	382.7	90% Chebyshev (MVUE) UCL	407.6
95% Chebyshev (MVUE) UCL	438.1	97.5% Chebyshev (MVUE) UCL	480.3
99% Chebyshev (MVUE) UCL	563.4		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	644.7	95% Jackknife UCL	645.1
95% Standard Bootstrap UCL	645.8	95% Bootstrap-t UCL	722.7
95% Hall's Bootstrap UCL	714.9	95% Percentile Bootstrap UCL	655.8
95% BCA Bootstrap UCL	695.1		
90% Chebyshev(Mean, Sd) UCL	761.2	95% Chebyshev(Mean, Sd) UCL	877.9
97.5% Chebyshev(Mean, Sd) UCL	1040	99% Chebyshev(Mean, Sd) UCL	1358
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	877.9		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***1-methylphenanthrene***832-69-9***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	299
		Number of Missing Observations	0
Minimum	0.00929	Mean	0.103
Maximum	1.62	Median	0.0494
SD	0.211	Std. Error of Mean	0.0122
Coefficient of Variation	2.041	Skewness	5.085
Normal GOF Test			
Shapiro Wilk Test Statistic	0.361	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.343	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.124	95% Adjusted-CLT UCL (Chen-1995)	0.127
		95% Modified-t UCL (Johnson-1978)	0.124
Gamma GOF Test			
A-D Test Statistic	34.41	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.783	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.265	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0536	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			

k hat (MLE)	1.031	k star (bias corrected MLE)	1.023
Theta hat (MLE)	0.1	Theta star (bias corrected MLE)	0.101
nu hat (MLE)	618.6	nu star (bias corrected)	613.7
MLE Mean (bias corrected)	0.103	MLE Sd (bias corrected)	0.102
		Approximate Chi Square Value (0.05)	557.3
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	557
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.114	95% Adjusted Gamma UCL (use when n<50)	0.114
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.834	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.171	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-4.679	Mean of logged Data	-2.827
Maximum of Logged Data	0.482	SD of logged Data	0.811
Assuming Lognormal Distribution			
95% H-UCL	0.0903	90% Chebyshev (MVUE) UCL	0.0954
95% Chebyshev (MVUE) UCL	0.101	97.5% Chebyshev (MVUE) UCL	0.11
99% Chebyshev (MVUE) UCL	0.126		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.124	95% Jackknife UCL	0.124
95% Standard Bootstrap UCL	0.124	95% Bootstrap-t UCL	0.132
95% Hall's Bootstrap UCL	0.128	95% Percentile Bootstrap UCL	0.125
95% BCA Bootstrap UCL	0.127		
90% Chebyshev(Mean, Sd) UCL	0.14	95% Chebyshev(Mean, Sd) UCL	0.157
97.5% Chebyshev(Mean, Sd) UCL	0.18	99% Chebyshev(Mean, Sd) UCL	0.225
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.157		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***1-methylphenanthrene***832-69-9***t***ug/kg)			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	253
		Number of Missing Observations	0
Minimum	21.6	Mean	1089
Maximum	35400	Median	391
SD	3246	Std. Error of Mean	187.4
Coefficient of Variation	2.981	Skewness	6.887
Normal GOF Test			
Shapiro Wilk Test Statistic	0.299	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.383	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1398	95% Adjusted-CLT UCL (Chen-1995)	1477
		95% Modified-t UCL (Johnson-1978)	1410
Gamma GOF Test			
A-D Test Statistic	29.45	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.805	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.25	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0545	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.664	k star (bias corrected MLE)	0.659
Theta hat (MLE)	1641	Theta star (bias corrected MLE)	1652
nu hat (MLE)	398.1	nu star (bias corrected)	395.5
MLE Mean (bias corrected)	1089	MLE Sd (bias corrected)	1341
		Approximate Chi Square Value (0.05)	350.4

Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	350.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1229	95% Adjusted Gamma UCL (use when n<50)	1230
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.919	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.102	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.073	Mean of logged Data	6.075
Maximum of Logged Data	10.47	SD of logged Data	1.056
Assuming Lognormal Distribution			
95% H-UCL	867.7	90% Chebyshev (MVUE) UCL	928.4
95% Chebyshev (MVUE) UCL	1006	97.5% Chebyshev (MVUE) UCL	1114
99% Chebyshev (MVUE) UCL	1325		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1397	95% Jackknife UCL	1398
95% Standard Bootstrap UCL	1403	95% Bootstrap-t UCL	1530
95% Hall's Bootstrap UCL	1509	95% Percentile Bootstrap UCL	1402
95% BCA Bootstrap UCL	1514		
90% Chebyshev(Mean, Sd) UCL	1651	95% Chebyshev(Mean, Sd) UCL	1906
97.5% Chebyshev(Mean, Sd) UCL	2259	99% Chebyshev(Mean, Sd) UCL	2954
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1906		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,3,5-trimethylnaphthalene (1,6,7-trimethylnaphthalene)***2245-38-7***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	293
		Number of Missing Observations	0
Minimum	0.00401	Mean	0.0584
Maximum	1.021	Median	0.018
SD	0.127	Std. Error of Mean	0.00734
Coefficient of Variation	2.179	Skewness	4.474
Normal GOF Test			
Shapiro Wilk Test Statistic	0.44	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.335	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.0705	95% Adjusted-CLT UCL (Chen-1995)	0.0725
		95% Modified-t UCL (Johnson-1978)	0.0708
Gamma GOF Test			
A-D Test Statistic	25.49	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.806	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.231	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0545	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.663	k star (bias corrected MLE)	0.659
Theta hat (MLE)	0.088	Theta star (bias corrected MLE)	0.0886
nu hat (MLE)	397.8	nu star (bias corrected)	395.2
MLE Mean (bias corrected)	0.0584	MLE Sd (bias corrected)	0.0719
		Approximate Chi Square Value (0.05)	#####
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	349.9
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.0659	95% Adjusted Gamma UCL (use when n<50)	0.0659

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.892	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.122	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-5.519	Mean of logged Data
Maximum of Logged Data	0.0209	SD of logged Data
Assuming Lognormal Distribution		
95% H-UCL	0.0526	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	0.0617	97.5% Chebyshev (MVUE) UCL
99% Chebyshev (MVUE) UCL	0.083	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	0.0705	95% Jackknife UCL
95% Standard Bootstrap UCL	0.0704	95% Bootstrap-t UCL
95% Hall's Bootstrap UCL	0.0727	95% Percentile Bootstrap UCL
95% BCA Bootstrap UCL	0.0725	
90% Chebyshev(Mean, Sd) UCL	0.0804	95% Chebyshev(Mean, Sd) UCL
97.5% Chebyshev(Mean, Sd) UCL	0.104	99% Chebyshev(Mean, Sd) UCL
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	0.0904	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***2,3,5-trimethylnaphthalene (1,6,7-trimethylnaphthalene)***2245-38-7***t***ug/kg)		
General Statistics		
Total Number of Observations	300	Number of Distinct Observations
		Number of Missing Observations
Minimum	5.86	Mean
Maximum	17400	Median
SD	1855	Std. Error of Mean
Coefficient of Variation	2.841	Skewness
Normal GOF Test		
Shapiro Wilk Test Statistic	0.36	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.364	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	829.8	95% Adjusted-CLT UCL (Chen-1995)
		95% Modified-t UCL (Johnson-1978)
Gamma GOF Test		
A-D Test Statistic	20.3	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.827	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.188	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0553	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	0.478	k star (bias corrected MLE)
Theta hat (MLE)	1367	Theta star (bias corrected MLE)
nu hat (MLE)	286.6	nu star (bias corrected)
MLE Mean (bias corrected)	653	MLE Sd (bias corrected)
		Approximate Chi Square Value (0.05)
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	753.8	95% Adjusted Gamma UCL (use when n<50)
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	5.20E-13	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0671	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level

Data Not Lognormal at 5% Significance Level

Lognormal Statistics			
Minimum of Logged Data	1.768	Mean of logged Data	5.142
Maximum of Logged Data	9.764	SD of logged Data	1.462

Assuming Lognormal Distribution			
95% H-UCL	619.1	90% Chebyshev (MVUE) UCL	672.1
95% Chebyshev (MVUE) UCL	752.4	97.5% Chebyshev (MVUE) UCL	863.8
99% Chebyshev (MVUE) UCL	1083		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs			
95% CLT UCL	829.2	95% Jackknife UCL	829.8
95% Standard Bootstrap UCL	831.3	95% Bootstrap-t UCL	907.8
95% Hall's Bootstrap UCL	877.2	95% Percentile Bootstrap UCL	836.2
95% BCA Bootstrap UCL	875.4		
90% Chebyshev(Mean, Sd) UCL	974.4	95% Chebyshev(Mean, Sd) UCL	1120
97.5% Chebyshev(Mean, Sd) UCL	1322	99% Chebyshev(Mean, Sd) UCL	1719

Suggested UCL to Use
95% Chebyshev (Mean, Sd) UCL 1120

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***2,4,5-t (2,4,5-trichlorophenoxyacetic acid)***93-76-5***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	161	Number of Distinct Observations	159
Number of Detects	7	Number of Non-Detects	154
Number of Distinct Detects	7	Number of Distinct Non-Detects	152
Minimum Detect	7.70E-04	Minimum Non-Detect	0.00208
Maximum Detect	0.00328	Maximum Non-Detect	0.0225
Variance Detects	7.56E-07	Percent Non-Detects	95.65%
Mean Detects	0.00141	SD Detects	8.69E-04
Median Detects	0.00108	CV Detects	0.616
Skewness Detects	2.113	Kurtosis Detects	4.845
Mean of Logged Detects	-6.684	SD of Logged Detects	0.495

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.738	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	3.13E-01	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00137	Standard Error of Mean	2.95E-04
SD	7.66E-04	95% KM (BCA) UCL	0.00191
95% KM (t) UCL	0.00186	95% KM (Percentile Bootstrap) UCL	0.00187
95% KM (z) UCL	0.00186	95% KM Bootstrap t UCL	0.00261
90% KM Chebyshev UCL	0.00226	95% KM Chebyshev UCL	0.00266
97.5% KM Chebyshev UCL	0.00322	99% KM Chebyshev UCL	0.00431

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.553	Anderson-Darling GOF Test	
5% A-D Critical Value	0.71	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.239	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.313	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	4.305	k star (bias corrected MLE)	2.555
Theta hat (MLE)	3.28E-04	Theta star (bias corrected MLE)	5.52E-04
nu hat (MLE)	60.27	nu star (bias corrected)	35.77
MLE Mean (bias corrected)	0.00141	MLE Sd (bias corrected)	8.83E-04

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.207	nu hat (KM)	1033
Approximate Chi Square Value (N/A, α)	958.9	Adjusted Chi Square Value (N/A, β)	958.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.00148	95% Gamma Adjusted KM-UCL (use when n<50)	0.00148

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.70E-04	Mean	0.00963
Maximum	0.01	Median	0.01
SD	0.00177	CV	0.183
k hat (MLE)	9.719	k star (bias corrected MLE)	9.542
Theta hat (MLE)	9.91E-04	Theta star (bias corrected MLE)	0.00101
nu hat (MLE)	3129	nu star (bias corrected)	3072
MLE Mean (bias corrected)	0.00963	MLE Sd (bias corrected)	0.31%
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (N/A, α)	2945	Adjusted Chi Square Value (N/A, β)	2944
95% Gamma Approximate UCL (use when n>=50)	0.01	95% Gamma Adjusted UCL (use when n<50)	0.01
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.88	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.21	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00122	Mean in Log Scale	-6.713
SD in Original Scale	1.79E-04	SD in Log Scale	0.103
95% t UCL (assumes normality of ROS data)	0.00125	95% Percentile Bootstrap UCL	0.00125
95% BCA Bootstrap UCL	0.00127	95% Bootstrap t UCL	0.00127
95% H-UCL (Log ROS)	0.00124		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-6.704	95% H-UCL (KM -Log)	0.00144
KM SD (logged)	0.441	95% Critical H Value (KM-Log)	1.78
KM Standard Error of Mean (logged)	0.172		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00489	Mean in Log Scale	-5.414
SD in Original Scale	0.00193	SD in Log Scale	0.473
95% t UCL (Assumes normality)	0.00515	95% H-Stat UCL	0.00533
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00186	95% KM (Percentile Bootstrap) UCL	0.00187
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,4,5-t (2,4,5-trichlorophenoxyacetic acid)***93-76-5***t***ug/kg)			
General Statistics			
Total Number of Observations	161	Number of Distinct Observations	81
Number of Detects	7	Number of Non-Detects	154
Number of Distinct Detects	6	Number of Distinct Non-Detects	75
Minimum Detect	11	Minimum Non-Detect	30
Maximum Detect	23	Maximum Non-Detect	130
Variance Detects	19.81	Percent Non-Detects	95.65%
Mean Detects	16.14	SD Detects	4.451
Median Detects	16	CV Detects	0.276
Skewness Detects	0.582	Kurtosis Detects	-0.902
Mean of Logged Detects	2.75	SD of Logged Detects	0.272
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.925	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.227	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	16.14	Standard Error of Mean	1.682
SD	4.121	95% KM (BCA) UCL	19.09
95% KM (t) UCL	18.93	95% KM (Percentile Bootstrap) UCL	19
95% KM (z) UCL	18.91	95% KM Bootstrap t UCL	20.79
90% KM Chebyshev UCL	21.19	95% KM Chebyshev UCL	23.48
97.5% KM Chebyshev UCL	26.65	99% KM Chebyshev UCL	32.88
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.279	Anderson-Darling GOF Test	
5% A-D Critical Value	0.707	Detected data appear Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.195	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.312	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	15.84	k star (bias corrected MLE)	9.146
Theta hat (MLE)	1.019	Theta star (bias corrected MLE)	1.765
nu hat (MLE)	221.8	nu star (bias corrected)	128
MLE Mean (bias corrected)	16.14	MLE Sd (bias corrected)	5.338
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	15.35	nu hat (KM)	4942
Approximate Chi Square Value (N/A, α)	4779	Adjusted Chi Square Value (N/A, β)	4778
95% Gamma Approximate KM-UCL (use when n>=50)	16.69	95% Gamma Adjusted KM-UCL (use when n<50)	16.7
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	9.879	Mean	16.02
Maximum	23.29	Median	15.89
SD	2.903	CV	0.181
k hat (MLE)	30.44	k star (bias corrected MLE)	29.87
Theta hat (MLE)	0.526	Theta star (bias corrected MLE)	0.536
nu hat (MLE)	9801	nu star (bias corrected)	9620
MLE Mean (bias corrected)	16.02	MLE Sd (bias corrected)	2.931
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (N/A, α)	9393	Adjusted Chi Square Value (N/A, β)	9391
95% Gamma Approximate UCL (use when n>=50)	16.41	95% Gamma Adjusted UCL (use when n<50)	16.41
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.948	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.181	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	15.88	Mean in Log Scale	2.75
SD in Original Scale	2.85	SD in Log Scale	0.178
95% t UCL (assumes normality of ROS data)	16.26	95% Percentile Bootstrap UCL	16.26
95% BCA Bootstrap UCL	16.26	95% Bootstrap t UCL	16.28
95% H-UCL (Log ROS)	16.27		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	2.75	95% H-UCL (KM -Log)	16.69
KM SD (logged)	0.252	95% Critical H Value (KM-Log)	1.703
KM Standard Error of Mean (logged)	0.103		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	35.59	Mean in Log Scale	3.525
SD in Original Scale	10.5	SD in Log Scale	0.319
95% t UCL (Assumes normality)	36.96	95% H-Stat UCL	37.32
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	18.93	95% KM (Percentile Bootstrap) UCL	19
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,4,5-tp (silvex)***93-72-1***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	161	Number of Distinct Observations	159
Number of Detects	4	Number of Non-Detects	157
Number of Distinct Detects	4	Number of Distinct Non-Detects	155
Minimum Detect	4.92E-04	Minimum Non-Detect	0.00208
Maximum Detect	0.00133	Maximum Non-Detect	0.0225
Variance Detects	1.73E-07	Percent Non-Detects	97.52%
Mean Detects	9.77E-04	SD Detects	4.16E-04
Median Detects	0.00104	CV Detects	0.425
Skewness Detects	-0.37	Kurtosis Detects	-3.883
Mean of Logged Detects	-7.01	SD of Logged Detects	0.478

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.864	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.291	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.77E-04	Standard Error of Mean	2.08E-04
SD	3.60E-04	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.00132	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.00132	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.0016	95% KM Chebyshev UCL	0.00188
97.5% KM Chebyshev UCL	0.00228	99% KM Chebyshev UCL	0.00305
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.419	Anderson-Darling GOF Test	
5% A-D Critical Value	0.658	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.321	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.396	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	6.454	k star (bias corrected MLE)	1.78
Theta hat (MLE)	1.51E-04	Theta star (bias corrected MLE)	5.49E-04
nu hat (MLE)	51.63	nu star (bias corrected)	14.24
MLE Mean (bias corrected)	9.77E-04	MLE Sd (bias corrected)	7.33E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	7.372	nu hat (KM)	2374
Approximate Chi Square Value (N/A, α)	2262	Adjusted Chi Square Value (N/A, β)	2261
95% Gamma Approximate KM-UCL (use when n>=50)	0.00103	95% Gamma Adjusted KM-UCL (use when n<50)	0.00103
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	4.92E-04	Mean	0.00978
Maximum	0.01	Median	0.01
SD	0.00141	CV	0.144
k hat (MLE)	13.65	k star (bias corrected MLE)	13.4
Theta hat (MLE)	7.16E-04	Theta star (bias corrected MLE)	7.30E-04
nu hat (MLE)	4395	nu star (bias corrected)	4315
MLE Mean (bias corrected)	0.00978	MLE Sd (bias corrected)	0.00267
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (N/A, α)	4163	Adjusted Chi Square Value (N/A, β)	4162
95% Gamma Approximate UCL (use when n>=50)	0.0101	95% Gamma Adjusted UCL (use when n<50)	N/A
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.874	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.284	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	9.05E-04	Mean in Log Scale	-7.01
SD in Original Scale	7.03E-05	SD in Log Scale	0.0783
95% t UCL (assumes normality of ROS data)	9.15E-04	95% Percentile Bootstrap UCL	9.15E-04
95% BCA Bootstrap UCL	9.15E-04	95% Bootstrap t UCL	9.16E-04
95% H-UCL (Log ROS)	N/A		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.01	95% H-UCL (KM -Log)	0.00104
KM SD (logged)	0.414	95% Critical H Value (KM-Log)	1.767
KM Standard Error of Mean (logged)	0.239		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00491	Mean in Log Scale	-5.407
SD in Original Scale	0.0019	SD in Log Scale	0.465
95% t UCL (Assumes normality)	0.00516	95% H-Stat UCL	0.00534
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00132	95% KM (Percentile Bootstrap) UCL	N/A

Warning: One or more Recommended UCL(s) not available!

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***2,4,5-tp (silvex)***93-72-1***t***ug/kg)

General Statistics			
Total Number of Observations	161	Number of Distinct Observations	81
Number of Detects	4	Number of Non-Detects	157
Number of Distinct Detects	4	Number of Distinct Non-Detects	77
Minimum Detect	3.3	Minimum Non-Detect	30
Maximum Detect	26	Maximum Non-Detect	130
Variance Detects	94.83	Percent Non-Detects	97.52%
Mean Detects	12.08	SD Detects	9.738
Median Detects	9.5	CV Detects	0.806
Skewness Detects	1.435	Kurtosis Detects	2.672
Mean of Logged Detects	2.238	SD of Logged Detects	0.844
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.87	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.338	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	12.08	Standard Error of Mean	4.869
SD	8.433	95% KM (BCA) UCL	N/A
95% KM (t) UCL	2.01E+01	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	20.08	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	26.68	95% KM Chebyshev UCL	33.3
97.5% KM Chebyshev UCL	42.48	99% KM Chebyshev UCL	60.52
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.305	Anderson-Darling GOF Test	
5% A-D Critical Value	0.66	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.269	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.398	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.129	k star (bias corrected MLE)	0.699
Theta hat (MLE)	5.673	Theta star (bias corrected MLE)	17.28
nu hat (MLE)	17.03	nu star (bias corrected)	5.59
MLE Mean (bias corrected)	12.08	MLE Sd (bias corrected)	14.44
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.05	nu hat (KM)	660.1
Approximate Chi Square Value (660.13, α)	601.5	Adjusted Chi Square Value (660.13, β)	601
95% Gamma Approximate KM-UCL (use when n>=50)	13.25	95% Gamma Adjusted KM-UCL (use when n<50)	13.26
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	11.72
Maximum	32.68	Median	10.86
SD	6.793	CV	0.58
k hat (MLE)	1.977	k star (bias corrected MLE)	1.944
Theta hat (MLE)	5.927	Theta star (bias corrected MLE)	6.027
nu hat (MLE)	636.6	nu star (bias corrected)	626.1
MLE Mean (bias corrected)	11.72	MLE Sd (bias corrected)	8.404
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (626.05, α)	569	Adjusted Chi Square Value (626.05, β)	568.5
95% Gamma Approximate UCL (use when n>=50)	12.89	95% Gamma Adjusted UCL (use when n<50)	N/A
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.236	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	11.16	Mean in Log Scale	2.238
SD in Original Scale	7.024	SD in Log Scale	0.594
95% t UCL (assumes normality of ROS data)	12.08	95% Percentile Bootstrap UCL	12.11

95% BCA Bootstrap UCL	12.12	95% Bootstrap t UCL	12.16
95% H-UCL (Log ROS)	12.21		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	2.238	95% H-UCL (KM -Log)	13.7
KM SD (logged)	0.731	95% Critical H Value (KM-Log)	1.951
KM Standard Error of Mean (logged)	0.422		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	36.01	Mean in Log Scale	3.533
SD in Original Scale	10.43	SD in Log Scale	0.354
95% t UCL (Assumes normality)	37.37	95% H-Stat UCL	38.25
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	20.13	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,4-d (2,4-dichlorophenoxyacetic acid)***94-75-7***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	161	Number of Distinct Observations	158
Number of Detects	6	Number of Non-Detects	155
Number of Distinct Detects	6	Number of Distinct Non-Detects	152
Minimum Detect	0.00177	Minimum Non-Detect	0.00847
Maximum Detect	0.0105	Maximum Non-Detect	0.0763
Variance Detects	1.96E-05	Percent Non-Detects	96.27%
Mean Detects	0.00604	SD Detects	0.00443
Median Detects	0.00579	CV Detects	0.734
Skewness Detects	0.0315	Kurtosis Detects	-3.216
Mean of Logged Detects	-5.406	SD of Logged Detects	0.888
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.754	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.3	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00546	Standard Error of Mean	0.00166
SD	0.004	95% KM (BCA) UCL	0.00935
95% KM (t) UCL	0.00821	95% KM (Percentile Bootstrap) UCL	0.00887
95% KM (z) UCL	0.00819	95% KM Bootstrap t UCL	0.009
90% KM Chebyshev UCL	0.0104	95% KM Chebyshev UCL	0.0127
97.5% KM Chebyshev UCL	0.0158	99% KM Chebyshev UCL	0.022
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.819	Anderson-Darling GOF Test	
5% A-D Critical Value	0.705	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.307	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.336	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.832	k star (bias corrected MLE)	1.027
Theta hat (MLE)	0.0033	Theta star (bias corrected MLE)	0.00588
nu hat (MLE)	21.99	nu star (bias corrected)	12.33
MLE Mean (bias corrected)	0.00604	MLE Sd (bias corrected)	0.00596
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.865	nu hat (KM)	600.4
Approximate Chi Square Value (600.44, α)	544.6	Adjusted Chi Square Value (600.44, β)	544.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.00603	95% Gamma Adjusted KM-UCL (use when n<50)	0.00603
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00177	Mean	0.00985
Maximum	0.0105	Median	0.01

SD	0.00109	CV	0.11
k hat (MLE)	33.52	k star (bias corrected MLE)	32.9
Theta hat (MLE)	2.94E-04	Theta star (bias corrected MLE)	2.99E-04
nu hat (MLE)	10793	nu star (bias corrected)	10593
MLE Mean (bias corrected)	0.00985	MLE Sd (bias corrected)	0.00172
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (N/A, α)	10355	Adjusted Chi Square Value (N/A, β)	10353
95% Gamma Approximate UCL (use when n>=50)	0.0101	95% Gamma Adjusted UCL (use when n<50)	0.0101
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.763	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.293	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0041	Mean in Log Scale	-5.515
SD in Original Scale	9.44E-04	SD in Log Scale	0.183
95% t UCL (assumes normality of ROS data)	0.00422	95% Percentile Bootstrap UCL	0.00423
95% BCA Bootstrap UCL	0.00426	95% Bootstrap t UCL	0.00428
95% H-UCL (Log ROS)	0.00419		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.522	95% H-UCL (KM -Log)	0.00627
KM SD (logged)	0.803	95% Critical H Value (KM-Log)	2.003
KM Standard Error of Mean (logged)	0.333		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0194	Mean in Log Scale	-4.036
SD in Original Scale	0.00747	SD in Log Scale	0.493
95% t UCL (Assumes normality)	0.0204	95% H-Stat UCL	0.0214
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00821	95% KM (Percentile Bootstrap) UCL	0.89%
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,4-d (2,4-dichlorophenoxyacetic acid)***94-75-7***t***ug/kg)			
General Statistics			
Total Number of Observations	161	Number of Distinct Observations	59
Number of Detects	6	Number of Non-Detects	155
Number of Distinct Detects	6	Number of Distinct Non-Detects	53
Minimum Detect	16	Minimum Non-Detect	120
Maximum Detect	110	Maximum Non-Detect	520
Variance Detects	1168	Percent Non-Detects	96.27%
Mean Detects	44.67	SD Detects	34.17
Median Detects	30.5	CV Detects	0.765
Skewness Detects	1.846	Kurtosis Detects	3.531
Mean of Logged Detects	3.602	SD of Logged Detects	0.659
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.782	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.322	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	44.67	Standard Error of Mean	13.95
SD	31.2	95% KM (BCA) UCL	69.83
95% KM (t) UCL	67.75	95% KM (Percentile Bootstrap) UCL	69.75
95% KM (z) UCL	67.61	95% KM Bootstrap t UCL	142.2
90% KM Chebyshev UCL	86.52	95% KM Chebyshev UCL	105.5
97.5% KM Chebyshev UCL	131.8	99% KM Chebyshev UCL	183.5
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.46	Anderson-Darling GOF Test	
5% A-D Critical Value	0.702	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.305	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.335	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	2.687 k star (bias corrected MLE)	1.455
Theta hat (MLE)	16.62 Theta star (bias corrected MLE)	30.7
nu hat (MLE)	32.25 nu star (bias corrected)	17.46
MLE Mean (bias corrected)	44.67 MLE Sd (bias corrected)	37.03
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.05 nu hat (KM)	660.1
Approximate Chi Square Value (660.10, α)	601.5 Adjusted Chi Square Value (660.10, β)	601
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	49.02 95% Gamma Adjusted KM-UCL (use when $n < 50$)	49.06
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	43.93
Maximum	123.6 Median	40.38
SD	26.48 CV	0.603
k hat (MLE)	1.837 k star (bias corrected MLE)	1.807
Theta hat (MLE)	23.91 Theta star (bias corrected MLE)	24.31
nu hat (MLE)	591.6 nu star (bias corrected)	581.9
MLE Mean (bias corrected)	43.93 MLE Sd (bias corrected)	32.68
	Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (581.90, α)	526.9 Adjusted Chi Square Value (581.90, β)	526.5
95% Gamma Approximate UCL (use when $n \geq 50$)	48.51 95% Gamma Adjusted UCL (use when $n < 50$)	48.55
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.931 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.788 Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.267 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.362 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	42 Mean in Log Scale	3.602
SD in Original Scale	23.07 SD in Log Scale	0.523
95% t UCL (assumes normality of ROS data)	45.01 95% Percentile Bootstrap UCL	45.09
95% BCA Bootstrap UCL	45.12 95% Bootstrap t UCL	45.31
95% H-UCL (Log ROS)	45.34	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	3.602 95% H-UCL (KM -Log)	48.02
KM SD (logged)	0.602 95% Critical H Value (KM-Log)	1.867
KM Standard Error of Mean (logged)	0.269	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	142.9 Mean in Log Scale	4.903
SD in Original Scale	43.39 SD in Log Scale	0.387
95% t UCL (Assumes normality)	148.6 95% H-Stat UCL	153.1
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	67.75 95% KM (Percentile Bootstrap) UCL	69.75
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***2,4'-ddd (o,p'-ddd)***53-19-0***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	365 Number of Distinct Observations	357
Number of Detects	300 Number of Non-Detects	65
Number of Distinct Detects	296 Number of Distinct Non-Detects	61
Minimum Detect	1.40E-04 Minimum Non-Detect	1.72E-05
Maximum Detect	0.0363 Maximum Non-Detect	0.0113
Variance Detects	1.92E-05 Percent Non-Detects	17.81%
Mean Detects	0.00345 SD Detects	0.00438
Median Detects	0.00205 CV Detects	1.27
Skewness Detects	3.428 Kurtosis Detects	16.42
Mean of Logged Detects	-6.224 SD of Logged Detects	1.068
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.666 Normal GOF Test on Detected Observations Only	

5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.225 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00299 Standard Error of Mean	2.19E-04
SD	0.00415 95% KM (BCA) UCL	0.00337
95% KM (t) UCL	0.00335 95% KM (Percentile Bootstrap) UCL	0.00337
95% KM (z) UCL	0.00335 95% KM Bootstrap t UCL	0.0034
90% KM Chebyshev UCL	0.00365 95% KM Chebyshev UCL	0.00395
97.5% KM Chebyshev UCL	0.00436 99% KM Chebyshev UCL	0.00517
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.718 Anderson-Darling GOF Test	
5% A-D Critical Value	0.783 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0879 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0536 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.035 k star (bias corrected MLE)	1.027
Theta hat (MLE)	0.00333 Theta star (bias corrected MLE)	0.00336
nu hat (MLE)	621.2 nu star (bias corrected)	616.3
MLE Mean (bias corrected)	0.00345 MLE Sd (bias corrected)	0.00341
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.521 nu hat (KM)	380.2
Approximate Chi Square Value (380.24, α)	336 Adjusted Chi Square Value (380.24, β)	335.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.00339 95% Gamma Adjusted KM-UCL (use when n<50)	0.00339
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	1.40E-04 Mean	0.00462
Maximum	0.0363 Median	0.00275
SD	0.0047 CV	1.017
k hat (MLE)	1.031 k star (bias corrected MLE)	1.024
Theta hat (MLE)	0.00448 Theta star (bias corrected MLE)	0.00451
nu hat (MLE)	752.4 nu star (bias corrected)	747.5
MLE Mean (bias corrected)	0.00462 MLE Sd (bias corrected)	0.00456
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (747.53, α)	685.1 Adjusted Chi Square Value (747.53, β)	684.9
95% Gamma Approximate UCL (use when n>=50)	0.00504 95% Gamma Adjusted UCL (use when n<50)	0.00504
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0388 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00295 Mean in Log Scale	-6.493
SD in Original Scale	0.00412 SD in Log Scale	1.193
95% t UCL (assumes normality of ROS data)	0.00331 95% Percentile Bootstrap UCL	0.0033
95% BCA Bootstrap UCL	0.00335 95% Bootstrap t UCL	0.0034
95% H-UCL (Log ROS)	0.00356	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-6.76 95% H-UCL (KM -Log)	0.00731
KM SD (logged)	1.775 95% Critical H Value (KM-Log)	2.865
KM Standard Error of Mean (logged)	0.0968	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.00315 Mean in Log Scale	-6.602
SD in Original Scale	0.00412 SD in Log Scale	1.644
95% t UCL (Assumes normality)	0.00351 95% H-Stat UCL	0.00664
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	0.00395	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***2,4'-ddd (o,p'-ddd)***53-19-0***t***ug/kg)

General Statistics			
Total Number of Observations	365	Number of Distinct Observations	301
Number of Detects	300	Number of Non-Detects	65
Number of Distinct Detects	258	Number of Distinct Non-Detects	49
Minimum Detect	0.67	Minimum Non-Detect	0.11
Maximum Detect	430	Maximum Non-Detect	112.1
Variance Detects	3026	Percent Non-Detects	17.81%
Mean Detects	35.31	SD Detects	55.01
Median Detects	17.5	CV Detects	1.558
Skewness Detects	3.995	Kurtosis Detects	20.75
Mean of Logged Detects	2.693	SD of Logged Detects	1.415
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.597	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.264	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	30.39	Standard Error of Mean	2.711
SD	51.36	95% KM (BCA) UCL	35.03
95% KM (t) UCL	34.86	95% KM (Percentile Bootstrap) UCL	35.15
95% KM (z) UCL	34.85	95% KM Bootstrap t UCL	35.69
90% KM Chebyshev UCL	38.52	95% KM Chebyshev UCL	42.21
97.5% KM Chebyshev UCL	47.32	99% KM Chebyshev UCL	57.36
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.393	Anderson-Darling GOF Test	
5% A-D Critical Value	0.802	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0792	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0544	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.694	k star (bias corrected MLE)	0.689
Theta hat (MLE)	50.86	Theta star (bias corrected MLE)	51.21
nu hat (MLE)	416.5	nu star (bias corrected)	413.7
MLE Mean (bias corrected)	35.31	MLE Sd (bias corrected)	42.52
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.35	nu hat (KM)	255.6
Approximate Chi Square Value (255.55, α)	219.5	Adjusted Chi Square Value (255.55, β)	219.4
95% Gamma Approximate KM-UCL (use when n>=50)	35.38	95% Gamma Adjusted KM-UCL (use when n<50)	35.4
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	29.63
Maximum	430	Median	10.2
SD	51.39	CV	1.735
k hat (MLE)	0.413	k star (bias corrected MLE)	0.411
Theta hat (MLE)	71.74	Theta star (bias corrected MLE)	72.01
nu hat (MLE)	301.5	nu star (bias corrected)	300.3
MLE Mean (bias corrected)	29.63	MLE Sd (bias corrected)	46.19
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (300.34, α)	261.2	Adjusted Chi Square Value (300.34, β)	261.1
95% Gamma Approximate UCL (use when n>=50)	34.07	95% Gamma Adjusted UCL (use when n<50)	34.09
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0764	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	29.74	Mean in Log Scale	2.334
SD in Original Scale	51.31	SD in Log Scale	1.585
95% t UCL (assumes normality of ROS data)	34.17	95% Percentile Bootstrap UCL	34.44
95% BCA Bootstrap UCL	35.28	95% Bootstrap t UCL	34.97
95% H-UCL (Log ROS)	45.22		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	32.11	Mean in Log Scale	2.325
SD in Original Scale	51.15	SD in Log Scale	1.867
95% t UCL (Assumes normality)	36.53	95% H-Stat UCL	78.19

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL 42.21

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***2,4'-dde (o,p'-dde)***3424-82-6***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	358
Number of Detects	320	Number of Non-Detects	46
Number of Distinct Detects	314	Number of Distinct Non-Detects	44
Minimum Detect	1.80E-05	Minimum Non-Detect	2.97E-05
Maximum Detect	0.0135	Maximum Non-Detect	0.0142
Variance Detects	2.25E-06	Percent Non-Detects	12.57%
Mean Detects	7.74E-04	SD Detects	0.0015
Median Detects	3.79E-04	CV Detects	1.939
Skewness Detects	5.448	Kurtosis Detects	34.35
Mean of Logged Detects	-7.765	SD of Logged Detects	0.948
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.41	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.311	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0495	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.24E-04	Standard Error of Mean	7.65E-05
SD	0.00144	95% KM (BCA) UCL	8.48E-04
95% KM (t) UCL	8.50E-04	95% KM (Percentile Bootstrap) UCL	8.55E-04
95% KM (z) UCL	8.50E-04	95% KM Bootstrap t UCL	8.93E-04
90% KM Chebyshev UCL	9.53E-04	95% KM Chebyshev UCL	0.00106
97.5% KM Chebyshev UCL	0.0012	99% KM Chebyshev UCL	0.00149
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	18.82	Anderson-Darling GOF Test	
5% A-D Critical Value	0.786	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.183	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0523	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.965	k star (bias corrected MLE)	0.958
Theta hat (MLE)	8.02E-04	Theta star (bias corrected MLE)	8.08E-04
nu hat (MLE)	617.3	nu star (bias corrected)	612.9
MLE Mean (bias corrected)	7.74E-04	MLE Sd (bias corrected)	7.91E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.255	nu hat (KM)	186.3
Approximate Chi Square Value (186.33, α)	155.8	Adjusted Chi Square Value (186.33, β)	155.6
95% Gamma Approximate KM-UCL (use when n>=50)	8.66E-04	95% Gamma Adjusted KM-UCL (use when n<50)	8.67E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.80E-05	Mean	0.00193
Maximum	0.0135	Median	4.36E-04
SD	0.00337	CV	1.742
k hat (MLE)	0.558	k star (bias corrected MLE)	0.555
Theta hat (MLE)	0.00347	Theta star (bias corrected MLE)	0.00348
nu hat (MLE)	408.4	nu star (bias corrected)	406.4
MLE Mean (bias corrected)	0.00193	MLE Sd (bias corrected)	0.00259
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (406.39, α)	360.7	Adjusted Chi Square Value (406.39, β)	360.5
95% Gamma Approximate UCL (use when n>=50)	0.00218	95% Gamma Adjusted UCL (use when n<50)	0.00218
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0805	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0495	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.07E-04	Mean in Log Scale	-7.874
SD in Original Scale	0.00141	SD in Log Scale	0.983
95% t UCL (assumes normality of ROS data)	8.29E-04	95% Percentile Bootstrap UCL	8.41E-04
95% BCA Bootstrap UCL	8.52E-04	95% Bootstrap t UCL	8.57E-04
95% H-UCL (Log ROS)	6.88E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.99E-04	Mean in Log Scale	-7.726
SD in Original Scale	0.00174	SD in Log Scale	1.215
95% t UCL (Assumes normality)	0.00115	95% H-Stat UCL	0.00107
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	8.48E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,4'-dde (o,p'-dde)***3424-82-6***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	279
Number of Detects	320	Number of Non-Detects	46
Number of Distinct Detects	240	Number of Distinct Non-Detects	43
Minimum Detect	0.12	Minimum Non-Detect	0.12
Maximum Detect	140	Maximum Non-Detect	123.4
Variance Detects	302.4	Percent Non-Detects	12.57%
Mean Detects	7.686	SD Detects	17.39
Median Detects	2.835	CV Detects	2.263
Skewness Detects	5.183	Kurtosis Detects	29.55
Mean of Logged Detects	1.178	SD of Logged Detects	1.156
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.397	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.332	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0495	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.107	Standard Error of Mean	0.875
SD	16.52	95% KM (BCA) UCL	8.61
95% KM (t) UCL	8.55	95% KM (Percentile Bootstrap) UCL	8.609
95% KM (z) UCL	8.546	95% KM Bootstrap t UCL	8.958
90% KM Chebyshev UCL	9.732	95% KM Chebyshev UCL	10.92
97.5% KM Chebyshev UCL	12.57	99% KM Chebyshev UCL	15.81
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	18.5	Anderson-Darling GOF Test	
5% A-D Critical Value	0.802	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.17	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0529	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.701	k star (bias corrected MLE)	0.697
Theta hat (MLE)	10.96	Theta star (bias corrected MLE)	11.03
nu hat (MLE)	448.7	nu star (bias corrected)	445.8
MLE Mean (bias corrected)	7.686	MLE Sd (bias corrected)	9.209
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.185	nu hat (KM)	135.5
Approximate Chi Square Value (135.46, α)	109.6	Adjusted Chi Square Value (135.46, β)	109.5
95% Gamma Approximate KM-UCL (use when n>=50)	8.786	95% Gamma Adjusted KM-UCL (use when n<50)	8.793
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	6.839
Maximum	140	Median	2.31
SD	16.42	CV	2.401
k hat (MLE)	0.544	k star (bias corrected MLE)	0.541

Theta hat (MLE)	12.57	Theta star (bias corrected MLE)	12.63
nu hat (MLE)	398.3	nu star (bias corrected)	396.3
MLE Mean (bias corrected)	6.839	MLE Sd (bias corrected)	9.294
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (396.35, α)	351.2	Adjusted Chi Square Value (396.35, β)	351
95% Gamma Approximate UCL (use when $n \geq 50$)	7.718	95% Gamma Adjusted UCL (use when $n < 50$)	7.721
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0655	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0495	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6.928	Mean in Log Scale	1.028
SD in Original Scale	16.39	SD in Log Scale	1.221
95% t UCL (assumes normality of ROS data)	8.341	95% Percentile Bootstrap UCL	8.344
95% BCA Bootstrap UCL	8.65	95% Bootstrap t UCL	8.619
95% H-UCL (Log ROS)	6.83		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.863	Mean in Log Scale	1.202
SD in Original Scale	19.1	SD in Log Scale	1.45
95% t UCL (Assumes normality)	11.51	95% H-Stat UCL	11.52
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	10.92		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,4'-ddt (o,p'-ddt)***789-02-6***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	343
Number of Detects	63	Number of Non-Detects	303
Number of Distinct Detects	59	Number of Distinct Non-Detects	289
Minimum Detect	1.00E-05	Minimum Non-Detect	1.72E-05
Maximum Detect	0.122	Maximum Non-Detect	0.0142
Variance Detects	2.50E-04	Percent Non-Detects	82.79%
Mean Detects	0.00353	SD Detects	0.0158
Median Detects	2.17E-04	CV Detects	4.488
Skewness Detects	7.094	Kurtosis Detects	53.31
Mean of Logged Detects	-8.283	SD of Logged Detects	1.985
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.243	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.412	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	6.45E-04	Standard Error of Mean	3.50E-04
SD	0.00665	95% KM (BCA) UCL	0.00142
95% KM (t) UCL	0.00122	95% KM (Percentile Bootstrap) UCL	0.00131
95% KM (z) UCL	0.00122	95% KM Bootstrap t UCL	0.00299
90% KM Chebyshev UCL	0.0017	95% KM Chebyshev UCL	0.00217
97.5% KM Chebyshev UCL	0.00283	99% KM Chebyshev UCL	0.00413
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.791	Anderson-Darling GOF Test	
5% A-D Critical Value	0.881	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.316	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.123	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.267	k star (bias corrected MLE)	0.265
Theta hat (MLE)	0.0132	Theta star (bias corrected MLE)	0.0133
nu hat (MLE)	33.61	nu star (bias corrected)	33.34
MLE Mean (bias corrected)	0.00353	MLE Sd (bias corrected)	0.00685
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.00941	nu hat (KM)	6.885

Approximate Chi Square Value (6.89, α)	2.108	Adjusted Chi Square Value (6.89, β)	2.097
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00211	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00212
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs			
GROS may not be used when k star of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.00E-05	Mean	0.00889
Maximum	0.122	Median	0.01
SD	0.00697	CV	0.784
k hat (MLE)	1.108	k star (bias corrected MLE)	1.101
Theta hat (MLE)	0.00802	Theta star (bias corrected MLE)	0.00807
ν hat (MLE)	811.1	ν star (bias corrected)	805.8
MLE Mean (bias corrected)	0.00889	MLE Sd (bias corrected)	0.00847
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (805.77, α)	740.9	Adjusted Chi Square Value (805.77, β)	740.6
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00966	95% Gamma Adjusted UCL (use when $n < 50$)	0.00967
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.148	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6.17E-04	Mean in Log Scale	-10.87
SD in Original Scale	0.00666	SD in Log Scale	1.492
95% t UCL (assumes normality of ROS data)	0.00119	95% Percentile Bootstrap UCL	0.00127
95% BCA Bootstrap UCL	0.00189	95% Bootstrap t UCL	0.00306
95% H-UCL (Log ROS)	7.08E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00108	Mean in Log Scale	-8.808
SD in Original Scale	0.00672	SD in Log Scale	1.668
95% t UCL (Assumes normality)	0.00166	95% H-Stat UCL	7.64E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.00217		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,4'-ddt (o,p'-ddt)***789-02-6***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	268
Number of Detects	63	Number of Non-Detects	303
Number of Distinct Detects	5.80E+01	Number of Distinct Non-Detects	227
Minimum Detect	0.036	Minimum Non-Detect	0.12
Maximum Detect	1700	Maximum Non-Detect	123.4
Variance Detects	47084	Percent Non-Detects	82.79%
Mean Detects	41.87	SD Detects	217
Median Detects	1.7	CV Detects	5.183
Skewness Detects	7.451	Kurtosis Detects	57.46
Mean of Logged Detects	0.656	SD of Logged Detects	2.176
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.207	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.431	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.46	Standard Error of Mean	4.779
SD	90.68	95% KM (BCA) UCL	17.07
95% KM (t) UCL	15.34	95% KM (Percentile Bootstrap) UCL	16.77
95% KM (z) UCL	15.32	95% KM Bootstrap t UCL	49.48
90% KM Chebyshev UCL	21.8	95% KM Chebyshev UCL	28.29
97.5% KM Chebyshev UCL	37.3	99% KM Chebyshev UCL	55.01
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	7.926	Anderson-Darling GOF Test	

5% A-D Critical Value	0.898	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.339	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.124	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.233	k star (bias corrected MLE)	0.233
Theta hat (MLE)	179.5	Theta star (bias corrected MLE)	179.9
nu hat (MLE)	29.4	nu star (bias corrected)	29.33
MLE Mean (bias corrected)	41.87	MLE Sd (bias corrected)	86.78
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.00677	nu hat (KM)	4.954
Approximate Chi Square Value (4.95, α)	1.131	Adjusted Chi Square Value (4.95, β)	1.124
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	32.68	95% Gamma Adjusted KM-UCL (use when $n < 50$)	32.88
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	7.215
Maximum	1700	Median	0.01
SD	90.82	CV	12.59
k hat (MLE)	0.137	k star (bias corrected MLE)	0.138
Theta hat (MLE)	52.6	Theta star (bias corrected MLE)	52.33
nu hat (MLE)	100.4	nu star (bias corrected)	100.9
MLE Mean (bias corrected)	7.215	MLE Sd (bias corrected)	19.43
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (100.91, α)	78.74	Adjusted Chi Square Value (100.91, β)	78.66
95% Gamma Approximate UCL (use when $n \geq 50$)	9.247	95% Gamma Adjusted UCL (use when $n < 50$)	9.256
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.138	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.112	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.284	Mean in Log Scale	-2.041
SD in Original Scale	90.81	SD in Log Scale	1.679
95% t UCL (assumes normality of ROS data)	15.11	95% Percentile Bootstrap UCL	16.52
95% BCA Bootstrap UCL	21.7	95% Bootstrap t UCL	49.28
95% H-UCL (Log ROS)	0.678		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.678	95% H-UCL (KM -Log)	1.014
KM SD (logged)	1.699	95% Critical H Value (KM-Log)	2.785
KM Standard Error of Mean (logged)	0.162		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	11.62	Mean in Log Scale	0.117
SD in Original Scale	91.25	SD in Log Scale	1.8
95% t UCL (Assumes normality)	19.49	95% H-Stat UCL	7.466
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	37.3		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,6-dimethylnaphthalene***581-42-0***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	299
		Number of Missing Observations	0
Minimum	0.0112	Mean	0.108
Maximum	3.239	Median	0.0512
SD	0.259	Std. Error of Mean	0.015
Coefficient of Variation	2.41	Skewness	7.932
Normal GOF Test			
Shapiro Wilk Test Statistic	0.317	Shapiro Wilk GOF Test	

5% Shapiro Wilk P Value		0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic		0.361 Lilliefors GOF Test	
5% Lilliefors Critical Value		0.0512 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL		0.132	95% Adjusted-CLT UCL (Chen-1995) 0.14
			95% Modified-t UCL (Johnson-1978) 0.133
Gamma GOF Test			
A-D Test Statistic		31.92 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value		0.785 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic		0.239 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value		0.0537 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)		0.987	k star (bias corrected MLE) 0.98
Theta hat (MLE)		0.109	Theta star (bias corrected MLE) 0.11
nu hat (MLE)		592.5	nu star (bias corrected) 587.9
MLE Mean (bias corrected)		0.108	MLE Sd (bias corrected) 0.109
			Approximate Chi Square Value (0.05) 532.6
Adjusted Level of Significance		0.0492	Adjusted Chi Square Value 532.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))		0.119	95% Adjusted Gamma UCL (use when n<50) 0.119
Lognormal GOF Test			
Shapiro Wilk Test Statistic		0.859 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value		0 Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic		0.136 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value		0.0512 Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data		-4.495	Mean of logged Data -2.814
Maximum of Logged Data		1.175	SD of logged Data 0.818
Assuming Lognormal Distribution			
95% H-UCL		0.092	90% Chebyshev (MVUE) UCL 0.0972
95% Chebyshev (MVUE) UCL		0.103	97.5% Chebyshev (MVUE) UCL 0.112
99% Chebyshev (MVUE) UCL		0.129	
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL		0.132	95% Jackknife UCL 0.132
95% Standard Bootstrap UCL		0.132	95% Bootstrap-t UCL 0.146
95% Hall's Bootstrap UCL		0.155	95% Percentile Bootstrap UCL 0.134
95% BCA Bootstrap UCL		0.14	
90% Chebyshev(Mean, Sd) UCL		0.153	95% Chebyshev(Mean, Sd) UCL 0.173
97.5% Chebyshev(Mean, Sd) UCL		0.201	99% Chebyshev(Mean, Sd) UCL 0.257
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL		0.173	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2,6-dimethylnaphthalene***581-42-0***t***ug/kg)			
General Statistics			
Total Number of Observations		300	Number of Distinct Observations 254
			Number of Missing Observations 0
Minimum		17.3	Mean 1088
Maximum		46000	Median 428.5
SD		3396	Std. Error of Mean 196
Coefficient of Variation		3.122	Skewness 9.158
Normal GOF Test			
Shapiro Wilk Test Statistic		0.285 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value		0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic		0.376 Lilliefors GOF Test	
5% Lilliefors Critical Value		0.0512 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1411	95% Adjusted-CLT UCL (Chen-1995) 1521
		95% Modified-t UCL (Johnson-1978) 1428
Gamma GOF Test		
A-D Test Statistic	25.42	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.805	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.217	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0545	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	0.672	k star (bias corrected MLE) 0.667
Theta hat (MLE)	1619	Theta star (bias corrected MLE) 1630
nu hat (MLE)	403.2	nu star (bias corrected) 400.5
MLE Mean (bias corrected)	1088	MLE Sd (bias corrected) 1331
		Approximate Chi Square Value (0.05) 355.1
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value 354.9
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	1227	95% Adjusted Gamma UCL (use when n<50) 1227
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.941	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	9.99E-16	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0752	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	2.851	Mean of logged Data 6.087
Maximum of Logged Data	10.74	SD of logged Data 1.074
Assuming Lognormal Distribution		
95% H-UCL	898.6	90% Chebyshev (MVUE) UCL 962.5
95% Chebyshev (MVUE) UCL	1044	97.5% Chebyshev (MVUE) UCL 1158
99% Chebyshev (MVUE) UCL	1382	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	1410	95% Jackknife UCL 1411
95% Standard Bootstrap UCL	1402	95% Bootstrap-t UCL 1622
95% Hall's Bootstrap UCL	2633	95% Percentile Bootstrap UCL 1446
95% BCA Bootstrap UCL	1583	
90% Chebyshev(Mean, Sd) UCL	1676	95% Chebyshev(Mean, Sd) UCL 1942
97.5% Chebyshev(Mean, Sd) UCL	2312	99% Chebyshev(Mean, Sd) UCL 3038
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	1942	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***2-methylantracene***613-12-7***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	300	Number of Distinct Observations 298
		Number of Missing Observations 0
Minimum	0.00279	Mean 0.0645
Maximum	0.672	Median 0.0394
SD	0.0899	Std. Error of Mean 0.52%
Coefficient of Variation	1.395	Skewness 4.441
Normal GOF Test		
Shapiro Wilk Test Statistic	0.515	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.271	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.073	95% Adjusted-CLT UCL (Chen-1995) 0.0744
		95% Modified-t UCL (Johnson-1978) 0.0732

Gamma GOF Test		
A-D Test Statistic	11.21	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.776	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.146	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0533	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	1.316	k star (bias corrected MLE) 1.305
Theta hat (MLE)	0.049	Theta star (bias corrected MLE) 0.0494
nu hat (MLE)	789.6	nu star (bias corrected) 783.1
MLE Mean (bias corrected)	0.0645	MLE Sd (bias corrected) 0.0564
		Approximate Chi Square Value (0.05) 719.1
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value 718.8
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	0.0702	95% Adjusted Gamma UCL (use when n<50) 0.0702
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.968	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	4.53E-04	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0691	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-5.882	Mean of logged Data -3.167
Maximum of Logged Data	-0.398	SD of logged Data 0.839
Assuming Lognormal Distribution		
95% H-UCL	0.066	90% Chebyshev (MVUE) UCL 0.0699
95% Chebyshev (MVUE) UCL	0.0744	97.5% Chebyshev (MVUE) UCL 0.0807
99% Chebyshev (MVUE) UCL	0.0932	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	0.073	95% Jackknife UCL 0.073
95% Standard Bootstrap UCL	0.0729	95% Bootstrap-t UCL 0.075
95% Hall's Bootstrap UCL	0.0747	95% Percentile Bootstrap UCL 0.0728
95% BCA Bootstrap UCL	0.0746	
90% Chebyshev(Mean, Sd) UCL	0.08	95% Chebyshev(Mean, Sd) UCL 0.0871
97.5% Chebyshev(Mean, Sd) UCL	0.0969	99% Chebyshev(Mean, Sd) UCL 0.116
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	0.0871	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***2-methylanthracene***613-12-7***t***ug/kg)		
General Statistics		
Total Number of Observations	300	Number of Distinct Observations 234
		Number of Missing Observations 0
Minimum	14.1	Mean 610.5
Maximum	16500	Median 257
SD	1370	Std. Error of Mean 79.12
Coefficient of Variation	2.245	Skewness 7.214
Normal GOF Test		
Shapiro Wilk Test Statistic	0.374	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.332	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	741	95% Adjusted-CLT UCL (Chen-1995) 775.8
		95% Modified-t UCL (Johnson-1978) 746.5
Gamma GOF Test		
A-D Test Statistic	19.89	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.791	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.189	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.054	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics		
k hat (MLE)	0.864 k star (bias corrected MLE)	0.858
Theta hat (MLE)	706.5 Theta star (bias corrected MLE)	711.8
nu hat (MLE)	518.5 nu star (bias corrected)	514.6
MLE Mean (bias corrected)	610.5 MLE Sd (bias corrected)	659.2
	Approximate Chi Square Value (0.05)	463
Adjusted Level of Significance	0.0492 Adjusted Chi Square Value	462.8

Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	678.5 95% Adjusted Gamma UCL (use when n<50)	678.8

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.944 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	5.91E-14 Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0856 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512 Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level		

Lognormal Statistics		
Minimum of Logged Data	2.646 Mean of logged Data	5.734
Maximum of Logged Data	9.711 SD of logged Data	0.994

Assuming Lognormal Distribution		
95% H-UCL	573.1 90% Chebyshev (MVUE) UCL	611.3
95% Chebyshev (MVUE) UCL	659.2 97.5% Chebyshev (MVUE) UCL	725.6
99% Chebyshev (MVUE) UCL	856.1	

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs		
95% CLT UCL	740.6 95% Jackknife UCL	741
95% Standard Bootstrap UCL	736 95% Bootstrap-t UCL	789.1
95% Hall's Bootstrap UCL	851.8 95% Percentile Bootstrap UCL	749.6
95% BCA Bootstrap UCL	781.5	
90% Chebyshev(Mean, Sd) UCL	847.8 95% Chebyshev(Mean, Sd) UCL	955.3
97.5% Chebyshev(Mean, Sd) UCL	1105 99% Chebyshev(Mean, Sd) UCL	1398

Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	955.3	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***2-methylidibenzothiophene & 3-methylidibenzothiophene***mdbzthphn2_3***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	300 Number of Distinct Observations	294
Number of Detects	292 Number of Non-Detects	8
Number of Distinct Detects	286 Number of Distinct Non-Detects	8
Minimum Detect	0.00343 Minimum Non-Detect	0.00137
Maximum Detect	1 Maximum Non-Detect	0.0402
Variance Detects	0.0113 Percent Non-Detects	2.67%
Mean Detects	0.0533 SD Detects	0.106
Median Detects	0.0204 CV Detects	1.997
Skewness Detects	4.913 Kurtosis Detects	29.83
Mean of Logged Detects	-3.656 SD of Logged Detects	1.033

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	4.46E-01 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.32 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0518 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.052 Standard Error of Mean	0.00608
SD	0.105 95% KM (BCA) UCL	0.0634
95% KM (t) UCL	0.062 95% KM (Percentile Bootstrap) UCL	0.0621
95% KM (z) UCL	0.062 95% KM Bootstrap t UCL	0.0646
90% KM Chebyshev UCL	0.0702 95% KM Chebyshev UCL	0.0785
97.5% KM Chebyshev UCL	0.0899 99% KM Chebyshev UCL	0.112

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	19.18 Anderson-Darling GOF Test	
5% A-D Critical Value	0.793 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.183 Kolmogrov-Smirnoff GOF	

5% K-S Critical Value	0.055	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.818	k star (bias corrected MLE) 0.812
Theta hat (MLE)	0.0651	Theta star (bias corrected MLE) 0.0656
nu hat (MLE)	477.6	nu star (bias corrected) 474.1
MLE Mean (bias corrected)	0.0533	MLE Sd (bias corrected) 0.0591
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.245	nu hat (KM) 147
Approximate Chi Square Value (146.97, α)	119.9	Adjusted Chi Square Value (146.97, β) 119.8
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0637	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.0638
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00343	Mean 0.0521
Maximum	1	Median 0.0197
SD	0.105	CV 2.018
k hat (MLE)	0.814	k star (bias corrected MLE) 0.809
Theta hat (MLE)	0.064	Theta star (bias corrected MLE) 0.0644
nu hat (MLE)	488.7	nu star (bias corrected) 485.1
MLE Mean (bias corrected)	0.0521	MLE Sd (bias corrected) 0.0579
		Adjusted Level of Significance (β) 0.0492
Approximate Chi Square Value (485.13, α)	435.1	Adjusted Chi Square Value (485.13, β) 434.8
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0581	95% Gamma Adjusted UCL (use when $n < 50$) 0.0581
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0955	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0518	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.052	Mean in Log Scale -3.708
SD in Original Scale	0.105	SD in Log Scale 1.075
95% t UCL (assumes normality of ROS data)	0.062	95% Percentile Bootstrap UCL 0.0625
95% BCA Bootstrap UCL	0.0641	95% Bootstrap t UCL 0.0642
95% H-UCL (Log ROS)	0.0501	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.052	Mean in Log Scale -3.717
SD in Original Scale	0.105	SD in Log Scale 1.099
95% t UCL (Assumes normality)	0.062	95% H-Stat UCL 0.0512
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	0.0785	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***2-methyldibenzothiophene & 3-methyldibenzothiophene***mdbzthphn2_3***t***ug/kg)		
General Statistics		
Total Number of Observations	300	Number of Distinct Observations 259
Number of Detects	292	Number of Non-Detects 8
Number of Distinct Detects	253	Number of Distinct Non-Detects 8
Minimum Detect	17.1	Minimum Non-Detect 6.66
Maximum Detect	14200	Maximum Non-Detect 219
Variance Detects	2171883	Percent Non-Detects 2.67%
Mean Detects	554.5	SD Detects 1474
Median Detects	164	CV Detects 2.658
Skewness Detects	5.926	Kurtosis Detects 41.52
Mean of Logged Detects	5.248	SD of Logged Detects 1.257
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.366	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.358	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0518	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	540.8	Standard Error of Mean	84.08
SD	1454	95% KM (BCA) UCL	692.7
95% KM (t) UCL	679.5	95% KM (Percentile Bootstrap) UCL	685.7
95% KM (z) UCL	679.1	95% KM Bootstrap t UCL	718.2
90% KM Chebyshev UCL	793	95% KM Chebyshev UCL	907.3
97.5% KM Chebyshev UCL	1066	99% KM Chebyshev UCL	1377

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	20.72	Anderson-Darling GOF Test	
5% A-D Critical Value	0.814	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.193	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0558	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.58	k star (bias corrected MLE)	0.577
Theta hat (MLE)	955.7	Theta star (bias corrected MLE)	961.8
nu hat (MLE)	338.9	nu star (bias corrected)	336.7
MLE Mean (bias corrected)	554.5	MLE Sd (bias corrected)	730.3

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.138	nu hat (KM)	83.02
Approximate Chi Square Value (83.02, α)	63.02	Adjusted Chi Square Value (83.02, β)	62.93
95% Gamma Approximate KM-UCL (use when n>=50)	712.4	95% Gamma Adjusted KM-UCL (use when n<50)	713.3

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	539.7
Maximum	14200	Median	155
SD	1457	CV	2.699
k hat (MLE)	0.488	k star (bias corrected MLE)	0.486
Theta hat (MLE)	1106	Theta star (bias corrected MLE)	1112
nu hat (MLE)	292.9	nu star (bias corrected)	291.3
MLE Mean (bias corrected)	539.7	MLE Sd (bias corrected)	774.6
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (291.33, α)	252.8	Adjusted Chi Square Value (291.33, β)	252.6
95% Gamma Approximate UCL (use when n>=50)	622	95% Gamma Adjusted UCL (use when n<50)	622.4

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0836	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0518	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	540.7	Mean in Log Scale	5.189
SD in Original Scale	1456	SD in Log Scale	1.303
95% t UCL (assumes normality of ROS data)	679.4	95% Percentile Bootstrap UCL	676.5
95% BCA Bootstrap UCL	712.7	95% Bootstrap t UCL	736.2
95% H-UCL (Log ROS)	502.3		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	540.8	Mean in Log Scale	5.185
SD in Original Scale	1456	SD in Log Scale	1.315
95% t UCL (Assumes normality)	679.5	95% H-Stat UCL	509.6
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (Chebyshev) UCL	907.3		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***2-methylnaphthalene***91-57-6***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
Number of Detects	361	Number of Non-Detects	5
Number of Distinct Detects	360	Number of Distinct Non-Detects	5
Minimum Detect	0.00383	Minimum Non-Detect	0.583
Maximum Detect	12.56	Maximum Non-Detect	0.795
Variance Detects	0.807	Percent Non-Detects	1.37%

Mean Detects	0.196	SD Detects	0.898
Median Detects	0.0645	CV Detects	4.584
Skewness Detects	11.64	Kurtosis Detects	146.4
Mean of Logged Detects	-2.643	SD of Logged Detects	1.041
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.176	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.415	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.195	Standard Error of Mean	0.0466
SD	0.891	95% KM (BCA) UCL	0.28
95% KM (t) UCL	0.271	95% KM (Percentile Bootstrap) UCL	0.272
95% KM (z) UCL	0.271	95% KM Bootstrap t UCL	0.422
90% KM Chebyshev UCL	0.334	95% KM Chebyshev UCL	0.398
97.5% KM Chebyshev UCL	0.486	99% KM Chebyshev UCL	0.659
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.77E+28	Anderson-Darling GOF Test	
5% A-D Critical Value	0.812	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.241	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0503	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.608	k star (bias corrected MLE)	0.605
Theta hat (MLE)	0.322	Theta star (bias corrected MLE)	0.324
nu hat (MLE)	439.3	nu star (bias corrected)	436.9
MLE Mean (bias corrected)	0.196	MLE Sd (bias corrected)	0.252
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0477	nu hat (KM)	34.89
Approximate Chi Square Value (34.89, α)	22.38	Adjusted Chi Square Value (34.89, β)	22.34
95% Gamma Approximate KM-UCL (use when n>=50)	0.303	95% Gamma Adjusted KM-UCL (use when n<50)	0.304
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00383	Mean	0.193
Maximum	12.56	Median	0.063
SD	0.892	CV	4.613
k hat (MLE)	0.601	k star (bias corrected MLE)	0.598
Theta hat (MLE)	0.322	Theta star (bias corrected MLE)	0.323
nu hat (MLE)	440.1	nu star (bias corrected)	437.9
MLE Mean (bias corrected)	0.193	MLE Sd (bias corrected)	0.25
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (437.87, α)	390.4	Adjusted Chi Square Value (437.87, β)	390.2
95% Gamma Approximate UCL (use when n>=50)	0.217	95% Gamma Adjusted UCL (use when n<50)	0.217
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0917	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.194	Mean in Log Scale	-2.644
SD in Original Scale	0.892	SD in Log Scale	1.034
95% t UCL (assumes normality of ROS data)	0.271	95% Percentile Bootstrap UCL	0.283
95% BCA Bootstrap UCL	0.314	95% Bootstrap t UCL	0.421
95% H-UCL (Log ROS)	0.136		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.198	Mean in Log Scale	-262.10%
SD in Original Scale	0.892	SD in Log Scale	1.051
95% t UCL (Assumes normality)	0.275	95% H-Stat UCL	0.142
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.398		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***2-methylnaphthalene***91-57-6***t***ug/kg)

General Statistics		
Total Number of Observations	366	Number of Distinct Observations 288
Number of Detects	361	Number of Non-Detects 5
Number of Distinct Detects	284	Number of Distinct Non-Detects 4
Minimum Detect	31.5	Minimum Non-Detect 6600
Maximum Detect	190713	Maximum Non-Detect 7500
Variance Detects	1.72E+08	Percent Non-Detects 1.37%
Mean Detects	2284	SD Detects 13127
Median Detects	386	CV Detects 5.747
Skewness Detects	11.86	Kurtosis Detects 152.8
Mean of Logged Detects	6.284	SD of Logged Detects 1.197
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.157	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.432	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2264	Standard Error of Mean 681.6
SD	13021	95% KM (BCA) UCL 3714
95% KM (t) UCL	3388	95% KM (Percentile Bootstrap) UCL 3496
95% KM (z) UCL	3385	95% KM Bootstrap t UCL 5599
90% KM Chebyshev UCL	4309	95% KM Chebyshev UCL 5235
97.5% KM Chebyshev UCL	6520	99% KM Chebyshev UCL 9046
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.77E+28	Anderson-Darling GOF Test
5% A-D Critical Value	0.836	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.259	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.051	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.446	k star (bias corrected MLE) 0.444
Theta hat (MLE)	5122	Theta star (bias corrected MLE) 5143
nu hat (MLE)	322	nu star (bias corrected) 320.7
MLE Mean (bias corrected)	2284	MLE Sd (bias corrected) 3428
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0302	nu hat (KM) 22.13
Approximate Chi Square Value (22.13, α)	12.44	Adjusted Chi Square Value (22.13, β) 12.41
95% Gamma Approximate KM-UCL (use when n>=50)	4029	95% Gamma Adjusted KM-UCL (use when n<50) 4038
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 2257
Maximum	190713	Median 381
SD	13039	CV 5.778
k hat (MLE)	0.42	k star (bias corrected MLE) 0.418
Theta hat (MLE)	5372	Theta star (bias corrected MLE) 5393
nu hat (MLE)	307.5	nu star (bias corrected) 306.3
MLE Mean (bias corrected)	2257	MLE Sd (bias corrected) 3489
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (306.27, α)	266.7	Adjusted Chi Square Value (306.27, β) 266.6
95% Gamma Approximate UCL (use when n>=50)	2591	95% Gamma Adjusted UCL (use when n<50) 2592
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.117	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2260	Mean in Log Scale 6.283
SD in Original Scale	13038	SD in Log Scale 1.189
95% t UCL (assumes normality of ROS data)	3384	95% Percentile Bootstrap UCL 3453
95% BCA Bootstrap UCL	3984	95% Bootstrap t UCL 5387
95% H-UCL (Log ROS)	1252	
DL/2 Statistics		

DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	2301	Mean in Log Scale 6.309
SD in Original Scale	13038	SD in Log Scale 1.208
95% t UCL (Assumes normality)	3425	95% H-Stat UCL 1320
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL 5235

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***2-methylphenanthrene***2531-84-2***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	300	Number of Distinct Observations 298
		Number of Missing Observations 0
Minimum	0.00793	Mean 0.095
Maximum	2.479	Median 0.0525
SD	0.203	Std. Error of Mean 0.0117
Coefficient of Variation	2.133	Skewness 7.669
Normal GOF Test		
Shapiro Wilk Test Statistic	0.316	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.357	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	0.114	95% Adjusted-CLT UCL (Chen-1995) 0.12
		95% Modified-t UCL (Johnson-1978) 0.115
Gamma GOF Test		
A-D Test Statistic	32.28	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.779	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.254	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0534	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	1.22	k star (bias corrected MLE) 1.21
Theta hat (MLE)	0.0779	Theta star (bias corrected MLE) 0.0785
nu hat (MLE)	731.9	nu star (bias corrected) 725.9
MLE Mean (bias corrected)	9.50E-02	MLE Sd (bias corrected) 0.0863
		Approximate Chi Square Value (0.05) 664.4
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value 664.1
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	0.104	95% Adjusted Gamma UCL (use when n<50) 0.104
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.855	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.144	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-4.837	Mean of logged Data -2.817
Maximum of Logged Data	0.908	SD of logged Data 0.726
Assuming Lognormal Distribution		
95% H-UCL	0.0844	90% Chebyshev (MVUE) UCL 0.0886
95% Chebyshev (MVUE) UCL	0.0936	97.5% Chebyshev (MVUE) UCL 0.1
99% Chebyshev (MVUE) UCL	0.114	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	0.114	95% Jackknife UCL 0.114
95% Standard Bootstrap UCL	0.114	95% Bootstrap-t UCL 0.125
95% Hall's Bootstrap UCL	0.13	95% Percentile Bootstrap UCL 0.115

95% BCA Bootstrap UCL	0.12		
90% Chebyshev(Mean, Sd) UCL	0.13	95% Chebyshev(Mean, Sd) UCL	0.146
97.5% Chebyshev(Mean, Sd) UCL	0.168	99% Chebyshev(Mean, Sd) UCL	0.211
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.146		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***2-methylphenanthrene***2531-84-2***t***ug/kg)			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	267
		Number of Missing Observations	0
Minimum	29.6	Mean	907.6
Maximum	35200	Median	430.5
SD	2592	Std. Error of Mean	149.7
Coefficient of Variation	2.856	Skewness	9.204
Normal GOF Test			
Shapiro Wilk Test Statistic	0.282	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.389	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1155	95% Adjusted-CLT UCL (Chen-1995)	1239
		95% Modified-t UCL (Johnson-1978)	1168
Gamma GOF Test			
A-D Test Statistic	24.9	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.794	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.231	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0541	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.815	k star (bias corrected MLE)	0.809
Theta hat (MLE)	1114	Theta star (bias corrected MLE)	1122
nu hat (MLE)	489.1	nu star (bias corrected)	485.5
MLE Mean (bias corrected)	907.6	MLE Sd (bias corrected)	1009
		Approximate Chi Square Value (0.05)	435.4
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	435.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1012	95% Adjusted Gamma UCL (use when n<50)	1013
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.929	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0994	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.388	Mean of logged Data	6.084
Maximum of Logged Data	10.47	SD of logged Data	0.953
Assuming Lognormal Distribution			
95% H-UCL	776.1	90% Chebyshev (MVUE) UCL	826.2
95% Chebyshev (MVUE) UCL	887.9	97.5% Chebyshev (MVUE) UCL	973.7
99% Chebyshev (MVUE) UCL	1142		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1154	95% Jackknife UCL	1155
95% Standard Bootstrap UCL	1157	95% Bootstrap-t UCL	1343
95% Hall's Bootstrap UCL	1544	95% Percentile Bootstrap UCL	1177
95% BCA Bootstrap UCL	1300		
90% Chebyshev(Mean, Sd) UCL	1357	95% Chebyshev(Mean, Sd) UCL	1560
97.5% Chebyshev(Mean, Sd) UCL	1842	99% Chebyshev(Mean, Sd) UCL	2397
Suggested UCL to Use			

95% Chebyshev (Mean, Sd) UCL		1560
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***3-methylphenol & 4-methylphenol (m&p-cresol)***meph3_4***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	335	Number of Distinct Observations 334
Number of Detects	215	Number of Non-Detects 120
Number of Distinct Detects	214	Number of Distinct Non-Detects 120
Minimum Detect	0.00498	Minimum Non-Detect 0.0306
Maximum Detect	2.385	Maximum Non-Detect 1.014
Variance Detects	0.0788	Percent Non-Detects 35.82%
Mean Detects	0.0884	SD Detects 0.281
Median Detects	0.0252	CV Detects 3.175
Skewness Detects	6.17	Kurtosis Detects 40.81
Mean of Logged Detects	-3.473	SD of Logged Detects 1.076
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.288	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.383	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0604	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0687	Standard Error of Mean 0.0125
SD	0.227	95% KM (BCA) UCL 0.0905
95% KM (t) UCL	0.0893	95% KM (Percentile Bootstrap) UCL 0.091
95% KM (z) UCL	0.0893	95% KM Bootstrap t UCL 0.0993
90% KM Chebyshev UCL	0.106	95% KM Chebyshev UCL 0.123
97.5% KM Chebyshev UCL	0.147	99% KM Chebyshev UCL 0.193
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	26.94	Anderson-Darling GOF Test
5% A-D Critical Value	0.812	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.274	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0651	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.591	k star (bias corrected MLE) 0.586
Theta hat (MLE)	0.15	Theta star (bias corrected MLE) 0.151
nu hat (MLE)	254.1	nu star (bias corrected) 251.9
MLE Mean (bias corrected)	0.0884	MLE Sd (bias corrected) 0.116
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0917	nu hat (KM) 61.47
Approximate Chi Square Value (61.47, α)	44.44	Adjusted Chi Square Value (61.47, β) 44.38
95% Gamma Approximate KM-UCL (use when n>=50)	0.0951	95% Gamma Adjusted KM-UCL (use when n<50) 0.0952
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00498	Mean 0.0603
Maximum	2.385	Median 0.0152
SD	0.228	CV 3.777
k hat (MLE)	0.58	k star (bias corrected MLE) 0.577
Theta hat (MLE)	0.104	Theta star (bias corrected MLE) 0.105
nu hat (MLE)	388.5	nu star (bias corrected) 386.4
MLE Mean (bias corrected)	0.0603	MLE Sd (bias corrected) 0.0795
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (386.36, α)	341.8	Adjusted Chi Square Value (386.36, β) 341.6
95% Gamma Approximate UCL (use when n>=50)	0.0682	95% Gamma Adjusted UCL (use when n<50) 0.0682
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.136	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0604	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0666	Mean in Log Scale -3.516
SD in Original Scale	0.227	SD in Log Scale 0.864
95% t UCL (assumes normality of ROS data)	0.0871	95% Percentile Bootstrap UCL 0.0895
95% BCA Bootstrap UCL	0.0937	95% Bootstrap t UCL 0.097

95% H-UCL (Log ROS)	0.0475	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.102	Mean in Log Scale -3.02
SD in Original Scale	0.229	SD in Log Scale 1.104
95% t UCL (Assumes normality)	0.123	95% H-Stat UCL 0.103
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (Chebyshev) UCL	0.123

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***3-methylphenol & 4-methylphenol (m&p-cresol)***meph3_4***t***ug/kg)

General Statistics		
Total Number of Observations	335	Number of Distinct Observations 254
Number of Detects	215	Number of Non-Detects 120
Number of Distinct Detects	180	Number of Distinct Non-Detects 81
Minimum Detect	11.4	Minimum Non-Detect 112
Maximum Detect	40300	Maximum Non-Detect 7200
Variance Detects	16055234	Percent Non-Detects 35.82%
Mean Detects	913.5	SD Detects 4007
Median Detects	208	CV Detects 4.386
Skewness Detects	8.262	Kurtosis Detects 7307.00%
Mean of Logged Detects	5.421	SD of Logged Detects 1.239

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.214	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.411	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0604	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	676.8	Standard Error of Mean 176.9
SD	3224	95% KM (BCA) UCL 1043
95% KM (t) UCL	968.6	95% KM (Percentile Bootstrap) UCL 988.4
95% KM (z) UCL	967.7	95% KM Bootstrap t UCL 1398
90% KM Chebyshev UCL	1207	95% KM Chebyshev UCL 1448
97.5% KM Chebyshev UCL	1782	99% KM Chebyshev UCL 2437

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	26.13	Anderson-Darling GOF Test
5% A-D Critical Value	0.831	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.273	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0658	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.461	k star (bias corrected MLE) 0.458
Theta hat (MLE)	1982	Theta star (bias corrected MLE) 1997
nu hat (MLE)	198.2	nu star (bias corrected) 196.7
MLE Mean (bias corrected)	913.5	MLE Sd (bias corrected) 1351

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0441	nu hat (KM) 29.53
Approximate Chi Square Value (29.53, α)	18.12	Adjusted Chi Square Value (29.53, β) 18.09
95% Gamma Approximate KM-UCL (use when n>=50)	1103	95% Gamma Adjusted KM-UCL (use when n<50) 1105
Gamma (KM) may not be used when k hat (KM) is < 0.1		

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean 630.1
Maximum	40300	Median 113
SD	3236	CV 5.136
k hat (MLE)	0.19	k star (bias corrected MLE) 0.19
Theta hat (MLE)	3316	Theta star (bias corrected MLE) 3311
nu hat (MLE)	127.3	nu star (bias corrected) 127.5
MLE Mean (bias corrected)	630.1	MLE Sd (bias corrected) 1444
		Adjusted Level of Significance (β) 0.0493

Approximate Chi Square Value (127.49, α)	102.4	Adjusted Chi Square Value (127.49, β)	102.3
95% Gamma Approximate UCL (use when n>=50)	784.4	95% Gamma Adjusted UCL (use when n<50)	785.1
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.108	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0604	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	659.4	Mean in Log Scale	5.349
SD in Original Scale	3226	SD in Log Scale	1.032
95% t UCL (assumes normality of ROS data)	950.1	95% Percentile Bootstrap UCL	963.3
95% BCA Bootstrap UCL	1085	95% Bootstrap t UCL	1394
95% H-UCL (Log ROS)	404.5		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	967.1	Mean in Log Scale	5.88
SD in Original Scale	3237	SD in Log Scale	1.261
95% t UCL (Assumes normality)	1259	95% H-Stat UCL	931.3
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	1448		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***4,4'-ddd (p,p'-ddd)***72-54-8***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	365	Number of Distinct Observations	364
Number of Detects	348	Number of Non-Detects	17
Number of Distinct Detects	347	Number of Distinct Non-Detects	17
Minimum Detect	2.08E-04	Minimum Non-Detect	6.45E-05
Maximum Detect	0.0771	Maximum Non-Detect	0.0142
Variance Detects	5.45E-05	Percent Non-Detects	4.66%
Mean Detects	0.00709	SD Detects	0.00738
Median Detects	0.0046	CV Detects	104.00%
Skewness Detects	3.685	Kurtosis Detects	25.66
Mean of Logged Detects	-5.368	SD of Logged Detects	94.60%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.737	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.182	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0475	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00693	Standard Error of Mean	3.81E-04
SD	0.00726	95% KM (BCA) UCL	0.00763
95% KM (t) UCL	0.00755	95% KM (Percentile Bootstrap) UCL	0.0076
95% KM (z) UCL	0.00755	95% KM Bootstrap t UCL	0.00763
90% KM Chebyshev UCL	0.00807	95% KM Chebyshev UCL	0.00859
97.5% KM Chebyshev UCL	0.00931	99% KM Chebyshev UCL	0.0107
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.654	Anderson-Darling GOF Test	
5% A-D Critical Value	0.776	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0853	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0499	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.332	k star (bias corrected MLE)	1.323
Theta hat (MLE)	0.00533	Theta star (bias corrected MLE)	0.00536
nu hat (MLE)	927.3	nu star (bias corrected)	920.6
MLE Mean (bias corrected)	0.00709	MLE Sd (bias corrected)	0.00617
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.911	nu hat (KM)	664.9
Approximate Chi Square Value (664.87, α)	606.1	Adjusted Chi Square Value (664.87, β)	605.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.0076	95% Gamma Adjusted KM-UCL (use when n<50)	0.0076
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.08E-04	Mean	0.00723
Maximum	0.0771	Median	0.00486
SD	0.00723	CV	1
k hat (MLE)	1.382	k star (bias corrected MLE)	1.373
Theta hat (MLE)	0.00523	Theta star (bias corrected MLE)	0.00527
nu hat (MLE)	1009	nu star (bias corrected)	1002
MLE Mean (bias corrected)	0.00723	MLE Sd (bias corrected)	0.00617
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	929.7	Adjusted Chi Square Value (N/A, β)	929.4
95% Gamma Approximate UCL (use when n>=50)	0.00779	95% Gamma Adjusted UCL (use when n<50)	0.0078
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0629	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0475	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00691	Mean in Log Scale	-5.392
SD in Original Scale	0.00726	SD in Log Scale	0.939
95% t UCL (assumes normality of ROS data)	0.00753	95% Percentile Bootstrap UCL	0.00755
95% BCA Bootstrap UCL	0.00762	95% Bootstrap t UCL	0.00765
95% H-UCL (Log ROS)	0.00783		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.401	95% H-UCL (KM -Log)	0.008
KM SD (logged)	0.966	95% Critical H Value (KM-Log)	2.1
KM Standard Error of Mean (logged)	0.0513		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00697	Mean in Log Scale	-5.384
SD in Original Scale	0.00724	SD in Log Scale	0.96
95% t UCL (Assumes normality)	0.00759	95% H-Stat UCL	0.00809
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00763		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***4,4'-ddd (p,p'-ddd)***72-54-8***t***ug/kg)			
General Statistics			
Total Number of Observations	365	Number of Distinct Observations	297
Number of Detects	348	Number of Non-Detects	17
Number of Distinct Detects	283	Number of Distinct Non-Detects	15
Minimum Detect	1.07	Minimum Non-Detect	0.897
Maximum Detect	1010	Maximum Non-Detect	123.4
Variance Detects	7770	Percent Non-Detects	4.66%
Mean Detects	69.35	SD Detects	88.15
Median Detects	39.55	CV Detects	1.271
Skewness Detects	4.432	Kurtosis Detects	38.05
Mean of Logged Detects	3.547	SD of Logged Detects	1.276
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.698	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.219	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0475	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	67.37	Standard Error of Mean	4.547
SD	86.58	95% KM (BCA) UCL	75.31
95% KM (t) UCL	74.87	95% KM (Percentile Bootstrap) UCL	75.16
95% KM (z) UCL	74.85	95% KM Bootstrap t UCL	76.27
90% KM Chebyshev UCL	81.01	95% KM Chebyshev UCL	87.19
97.5% KM Chebyshev UCL	95.77	99% KM Chebyshev UCL	112.6
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.708	Anderson-Darling GOF Test	

5% A-D Critical Value	0.792	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0941	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0505	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.85	k star (bias corrected MLE)	0.845
Theta hat (MLE)	81.56	Theta star (bias corrected MLE)	82.08
nu hat (MLE)	591.8	nu star (bias corrected)	588
MLE Mean (bias corrected)	69.35	MLE Sd (bias corrected)	75.45
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.605	nu hat (KM)	442
Approximate Chi Square Value (441.99, α)	394.3	Adjusted Chi Square Value (441.99, β)	394.1
95% Gamma Approximate KM-UCL (use when n>=50)	75.53	95% Gamma Adjusted KM-UCL (use when n<50)	75.56
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	67.04
Maximum	1010	Median	35
SD	86.72	CV	1.293
k hat (MLE)	0.836	k star (bias corrected MLE)	0.831
Theta hat (MLE)	80.24	Theta star (bias corrected MLE)	80.73
nu hat (MLE)	609.9	nu star (bias corrected)	606.3
MLE Mean (bias corrected)	67.04	MLE Sd (bias corrected)	73.57
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (606.27, α)	550.1	Adjusted Chi Square Value (606.27, β)	549.9
95% Gamma Approximate UCL (use when n>=50)	73.88	95% Gamma Adjusted UCL (use when n<50)	73.91
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0828	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0475	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	67.06	Mean in Log Scale	3.514
SD in Original Scale	86.7	SD in Log Scale	1.267
95% t UCL (assumes normality of ROS data)	74.54	95% Percentile Bootstrap UCL	75.5
95% BCA Bootstrap UCL	75.5	95% Bootstrap t UCL	75.91
95% H-UCL (Log ROS)	87.6		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	68.1	Mean in Log Scale	3.546
SD in Original Scale	86.29	SD in Log Scale	1.268
95% t UCL (Assumes normality)	75.55	95% H-Stat UCL	90.58
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	87.19		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***4,4'-dde (p,p'-dde)***72-55-9***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	363
Number of Detects	360	Number of Non-Detects	6
Number of Distinct Detects	357	Number of Distinct Non-Detects	6
Minimum Detect	1.55E-04	Minimum Non-Detect	0.007
Maximum Detect	0.041	Maximum Non-Detect	0.0142
Variance Detects	2.87E-05	Percent Non-Detects	1.64%
Mean Detects	0.00572	SD Detects	0.54%
Median Detects	0.00391	CV Detects	0.937
Skewness Detects	2.428	Kurtosis Detects	8.85
Mean of Logged Detects	-5.53	SD of Logged Detects	0.881
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.78	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.168	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00569	Standard Error of Mean	2.79E-04
SD	0.00533	95% KM (BCA) UCL	0.00618
95% KM (t) UCL	0.00615	95% KM (Percentile Bootstrap) UCL	0.00616
95% KM (z) UCL	0.00615	95% KM Bootstrap t UCL	0.0062
90% KM Chebyshev UCL	0.00653	95% KM Chebyshev UCL	0.00691
97.5% KM Chebyshev UCL	0.00744	99% KM Chebyshev UCL	0.00847

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.395	Anderson-Darling GOF Test	
5% A-D Critical Value	0.772	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0745	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0488	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.511	k star (bias corrected MLE)	1.5
Theta hat (MLE)	0.00379	Theta star (bias corrected MLE)	0.00381
nu hat (MLE)	1088	nu star (bias corrected)	1080
MLE Mean (bias corrected)	0.00572	MLE Sd (bias corrected)	0.00467

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.143	nu hat (KM)	836.9
Approximate Chi Square Value (836.87, α)	770.7	Adjusted Chi Square Value (836.87, β)	770.5
95% Gamma Approximate KM-UCL (use when n>=50)	0.00618	95% Gamma Adjusted KM-UCL (use when n<50)	0.00618

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.55E-04	Mean	0.00579
Maximum	0.041	Median	0.00396
SD	0.00534	CV	0.923
k hat (MLE)	1.522	k star (bias corrected MLE)	1.511
Theta hat (MLE)	0.00381	Theta star (bias corrected MLE)	0.00383
nu hat (MLE)	1114	nu star (bias corrected)	1106
MLE Mean (bias corrected)	0.00579	MLE Sd (bias corrected)	0.00471
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1030	Adjusted Chi Square Value (N/A, β)	1030
95% Gamma Approximate UCL (use when n>=50)	0.00622	95% Gamma Adjusted UCL (use when n<50)	0.00622

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0461	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00568	Mean in Log Scale	-5.532
SD in Original Scale	0.00533	SD in Log Scale	0.874
95% t UCL (assumes normality of ROS data)	0.00614	95% Percentile Bootstrap UCL	0.00615
95% BCA Bootstrap UCL	0.00616	95% Bootstrap t UCL	0.00619
95% H-UCL (Log ROS)	0.00636		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.533	95% H-UCL (KM -Log)	0.00638
KM SD (logged)	0.878	95% Critical H Value (KM-Log)	2.032
KM Standard Error of Mean (logged)	0.0462		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00572	Mean in Log Scale	-5.525
SD in Original Scale	0.00532	SD in Log Scale	0.875
95% t UCL (Assumes normality)	0.00617	95% H-Stat UCL	0.00641
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00618		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***4,4'-dde (p,p'-dde)***72-55-9***t***ug/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	281
Number of Detects	360	Number of Non-Detects	6
Number of Distinct Detects	277	Number of Distinct Non-Detects	5
Minimum Detect	0.99	Minimum Non-Detect	80
Maximum Detect	480	Maximum Non-Detect	123.4
Variance Detects	4270	Percent Non-Detects	1.64%
Mean Detects	54.89	SD Detects	6535.00%
Median Detects	33	CV Detects	1.191
Skewness Detects	2.773	Kurtosis Detects	11.18
Mean of Logged Detects	3.396	SD of Logged Detects	1.164
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.725	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.205	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	54.5	Standard Error of Mean	3.401
SD	64.88	95% KM (BCA) UCL	59.69
95% KM (t) UCL	60.1	95% KM (Percentile Bootstrap) UCL	60.42
95% KM (z) UCL	60.09	95% KM Bootstrap t UCL	60.64
90% KM Chebyshev UCL	64.7	95% KM Chebyshev UCL	69.32
97.5% KM Chebyshev UCL	75.73	99% KM Chebyshev UCL	88.33
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.584	Anderson-Darling GOF Test	
5% A-D Critical Value	0.787	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0891	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0495	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.953	k star (bias corrected MLE)	0.947
Theta hat (MLE)	57.62	Theta star (bias corrected MLE)	57.99
nu hat (MLE)	685.9	nu star (bias corrected)	681.5
MLE Mean (bias corrected)	54.89	MLE Sd (bias corrected)	56.42
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.706	nu hat (KM)	516.5
Approximate Chi Square Value (516.48, α)	464.8	Adjusted Chi Square Value (516.48, β)	464.6
95% Gamma Approximate KM-UCL (use when n>=50)	60.56	95% Gamma Adjusted KM-UCL (use when n<50)	60.58
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.99	Mean	54.39
Maximum	480	Median	32.7
SD	64.93	CV	1.194
k hat (MLE)	0.959	k star (bias corrected MLE)	0.953
Theta hat (MLE)	56.71	Theta star (bias corrected MLE)	57.07
nu hat (MLE)	702	nu star (bias corrected)	697.6
MLE Mean (bias corrected)	54.39	MLE Sd (bias corrected)	55.71
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (697.60, α)	637.3	Adjusted Chi Square Value (697.60, β)	637.1
95% Gamma Approximate UCL (use when n>=50)	59.53	95% Gamma Adjusted UCL (use when n<50)	59.55
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0519	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	54.37	Mean in Log Scale	3.391
SD in Original Scale	64.94	SD in Log Scale	1.155
95% t UCL (assumes normality of ROS data)	59.97	95% Percentile Bootstrap UCL	60.06
95% BCA Bootstrap UCL	60.7	95% Bootstrap t UCL	60.57
95% H-UCL (Log ROS)	66.37		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	54.8	Mean in Log Scale	3.404
SD in Original Scale	64.82	SD in Log Scale	1.156
95% t UCL (Assumes normality)	60.39	95% H-Stat UCL	67.3
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL 69.32

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***4,4'-ddt (p,p'-ddt)***50-29-3***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	357
Number of Detects	244	Number of Non-Detects	122
Number of Distinct Detects	237	Number of Distinct Non-Detects	122
Minimum Detect	2.17E-04	Minimum Non-Detect	3.47E-05
Maximum Detect	0.0266	Maximum Non-Detect	0.0213
Variance Detects	2.37E-05	Percent Non-Detects	33.33%
Mean Detects	0.00259	SD Detects	0.49%
Median Detects	9.25E-04	CV Detects	1.88
Skewness Detects	3.39	Kurtosis Detects	11.22
Mean of Logged Detects	-6.734	SD of Logged Detects	1.058
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.474	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.339	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0567	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00188	Standard Error of Mean	2.16E-04
SD	0.0041	95% KM (BCA) UCL	0.00225
95% KM (t) UCL	0.00224	95% KM (Percentile Bootstrap) UCL	0.00224
95% KM (z) UCL	0.00224	95% KM Bootstrap t UCL	0.0023
90% KM Chebyshev UCL	0.00253	95% KM Chebyshev UCL	0.00283
97.5% KM Chebyshev UCL	0.00323	99% KM Chebyshev UCL	0.00403
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	21.69	Anderson-Darling GOF Test	
5% A-D Critical Value	0.796	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.224	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0609	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.768	k star (bias corrected MLE)	0.762
Theta hat (MLE)	0.00337	Theta star (bias corrected MLE)	0.0034
nu hat (MLE)	375	nu star (bias corrected)	371.7
MLE Mean (bias corrected)	0.00259	MLE Sd (bias corrected)	0.00296
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.211	nu hat (KM)	154.2
Approximate Chi Square Value (154.20, α)	126.5	Adjusted Chi Square Value (154.20, β)	126.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.0023	95% Gamma Adjusted KM-UCL (use when n<50)	0.0023
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.17E-04	Mean	0.00506
Maximum	0.0266	Median	0.00177
SD	0.00529	CV	1.046
k hat (MLE)	0.804	k star (bias corrected MLE)	0.8
Theta hat (MLE)	0.00629	Theta star (bias corrected MLE)	0.00633
nu hat (MLE)	588.8	nu star (bias corrected)	585.3
MLE Mean (bias corrected)	0.00506	MLE Sd (bias corrected)	0.00566
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (585.26, α)	530.1	Adjusted Chi Square Value (585.26, β)	529.9
95% Gamma Approximate UCL (use when n>=50)	0.00558	95% Gamma Adjusted UCL (use when n<50)	0.00559
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.117	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0567	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00185	Mean in Log Scale	-7.173
SD in Original Scale	0.0041	SD in Log Scale	112.80%

95% t UCL (assumes normality of ROS data)	0.00221	95% Percentile Bootstrap UCL	0.00221
95% BCA Bootstrap UCL	0.00225	95% Bootstrap t UCL	0.00229
95% H-UCL (Log ROS)	0.00165		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0021	Mean in Log Scale	-7.026
SD in Original Scale	0.00415	SD in Log Scale	1.192
95% t UCL (Assumes normality)	0.00246	95% H-Stat UCL	0.00209
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.00283		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***4,4'-ddt (p,p'-ddt)***50-29-3***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	291
Number of Detects	244	Number of Non-Detects	122
Number of Distinct Detects	186	Number of Distinct Non-Detects	117
Minimum Detect	0.94	Minimum Non-Detect	0.157
Maximum Detect	314.4	Maximum Non-Detect	186.3
Variance Detects	2454	Percent Non-Detects	33.33%
Mean Detects	24.37	SD Detects	49.53
Median Detects	8	CV Detects	2.033
Skewness Detects	3.696	Kurtosis Detects	14.38
Mean of Logged Detects	2.217	SD of Logged Detects	1.266
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.479	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.318	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0567	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	17.41	Standard Error of Mean	2.193
SD	41.72	95% KM (BCA) UCL	21.13
95% KM (t) UCL	21.02	95% KM (Percentile Bootstrap) UCL	21.28
95% KM (z) UCL	21.01	95% KM Bootstrap t UCL	21.74
90% KM Chebyshev UCL	23.99	95% KM Chebyshev UCL	26.97
97.5% KM Chebyshev UCL	31.1	99% KM Chebyshev UCL	39.23
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	14.84	Anderson-Darling GOF Test	
5% A-D Critical Value	0.809	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.197	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0614	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.628	k star (bias corrected MLE)	0.623
Theta hat (MLE)	38.78	Theta star (bias corrected MLE)	39.09
nu hat (MLE)	306.7	nu star (bias corrected)	304.2
MLE Mean (bias corrected)	24.37	MLE Sd (bias corrected)	30.86
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.174	nu hat (KM)	127.4
Approximate Chi Square Value (127.44, α)	102.4	Adjusted Chi Square Value (127.44, β)	102.3
95% Gamma Approximate KM-UCL (use when n>=50)	21.67	95% Gamma Adjusted KM-UCL (use when n<50)	21.69
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	16.26
Maximum	314.4	Median	3.715
SD	42.02	CV	2.585
k hat (MLE)	0.252	k star (bias corrected MLE)	0.251
Theta hat (MLE)	64.59	Theta star (bias corrected MLE)	64.66
nu hat (MLE)	184.2	nu star (bias corrected)	184
MLE Mean (bias corrected)	16.26	MLE Sd (bias corrected)	32.42

	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (184.04, α)	153.7 Adjusted Chi Square Value (184.04, β)	153.6
95% Gamma Approximate UCL (use when $n \geq 50$)	19.47 95% Gamma Adjusted UCL (use when $n < 50$)	19.48
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0796 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0567 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	17.04 Mean in Log Scale	1.681
SD in Original Scale	41.74 SD in Log Scale	135.90%
95% t UCL (assumes normality of ROS data)	20.64 95% Percentile Bootstrap UCL	20.78
95% BCA Bootstrap UCL	21.19 95% Bootstrap t UCL	21.13
95% H-UCL (Log ROS)	16.09	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	19.75 Mean in Log Scale	1.902
SD in Original Scale	42.15 SD in Log Scale	1.408
95% t UCL (Assumes normality)	23.39 95% H-Stat UCL	21.7
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	26.97	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***4-chloroaniline***106-47-8***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	365 Number of Distinct Observations	363
Number of Detects	116 Number of Non-Detects	249
Number of Distinct Detects	116 Number of Distinct Non-Detects	248
Minimum Detect	0.00454 Minimum Non-Detect	0.0163
Maximum Detect	0.163 Maximum Non-Detect	6.045
Variance Detects	6.19E-04 Percent Non-Detects	68.22%
Mean Detects	0.0333 SD Detects	0.0249
Median Detects	0.0265 CV Detects	0.748
Skewness Detects	2.387 Kurtosis Detects	7.644
Mean of Logged Detects	-3.611 SD of Logged Detects	0.632
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.782 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.188 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0823 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0274 Standard Error of Mean	0.00145
SD	0.0199 95% KM (BCA) UCL	0.0299
95% KM (t) UCL	0.0298 95% KM (Percentile Bootstrap) UCL	0.0299
95% KM (z) UCL	0.0298 95% KM Bootstrap t UCL	0.03
90% KM Chebyshev UCL	0.0318 95% KM Chebyshev UCL	0.0338
97.5% KM Chebyshev UCL	0.0365 99% KM Chebyshev UCL	0.0418
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.682 Anderson-Darling GOF Test	
5% A-D Critical Value	0.762 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.103 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0861 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.567 k star (bias corrected MLE)	2.507
Theta hat (MLE)	0.013 Theta star (bias corrected MLE)	0.0133
nu hat (MLE)	595.6 nu star (bias corrected)	581.6
MLE Mean (bias corrected)	0.0333 MLE Sd (bias corrected)	0.021
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.895 nu hat (KM)	1384
Approximate Chi Square Value (N/A, α)	1298 Adjusted Chi Square Value (N/A, β)	1298
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0293 95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0293

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00454 Mean	0.0249
Maximum	0.163 Median	0.0227
SD	0.0153 CV	0.616
k hat (MLE)	5.171 k star (bias corrected MLE)	5.13
Theta hat (MLE)	0.00481 Theta star (bias corrected MLE)	0.00485
nu hat (MLE)	3775 nu star (bias corrected)	3745
MLE Mean (bias corrected)	0.0249 MLE Sd (bias corrected)	0.011
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3604 Adjusted Chi Square Value (N/A, β)	3603
95% Gamma Approximate UCL (use when n>=50)	0.0259 95% Gamma Adjusted UCL (use when n<50)	0.0259
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.058 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0823 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0253 Mean in Log Scale	-3.769
SD in Original Scale	0.0151 SD in Log Scale	0.383
95% t UCL (assumes normality of ROS data)	0.0266 95% Percentile Bootstrap UCL	0.0266
95% BCA Bootstrap UCL	0.027 95% Bootstrap t UCL	0.027
95% H-UCL (Log ROS)	0.0257	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-3.778 95% H-UCL (KM -Log)	0.0287
KM SD (logged)	0.585 95% Critical H Value (KM-Log)	1.839
KM Standard Error of Mean (logged)	0.0489	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.224 Mean in Log Scale	-2.845
SD in Original Scale	0.545 SD in Log Scale	1.375
95% t UCL (Assumes normality)	0.271 95% H-Stat UCL	0.179
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.0298 95% KM (% Bootstrap) UCL	0.0299
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***4-chloroaniline***106-47-8***t***ug/kg)		
General Statistics		
Total Number of Observations	365 Number of Distinct Observations	283
Number of Detects	116 Number of Non-Detects	249
Number of Distinct Detects	73 Number of Distinct Non-Detects	222
Minimum Detect	25 Minimum Non-Detect	83
Maximum Detect	1700 Maximum Non-Detect	71570
Variance Detects	78574 Percent Non-Detects	68.22%
Mean Detects	317.3 SD Detects	#####
Median Detects	240 CV Detects	0.883
Skewness Detects	2.178 Kurtosis Detects	6.181
Mean of Logged Detects	5.44 SD of Logged Detects	0.816
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.79 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.183 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0823 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	219.6 Standard Error of Mean	15.42
SD	225.2 95% KM (BCA) UCL	247.2
95% KM (t) UCL	245 95% KM (Percentile Bootstrap) UCL	244.7
95% KM (z) UCL	244.9 95% KM Bootstrap t UCL	247.7
90% KM Chebyshev UCL	265.8 95% KM Chebyshev UCL	286.8
97.5% KM Chebyshev UCL	315.9 99% KM Chebyshev UCL	373
Gamma GOF Tests on Detected Observations Only		

A-D Test Statistic	1.121	Anderson-Darling GOF Test	
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0825	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0867	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.712	k star (bias corrected MLE)	1.673
Theta hat (MLE)	185.4	Theta star (bias corrected MLE)	189.6
nu hat (MLE)	397.2	nu star (bias corrected)	388.2
MLE Mean (bias corrected)	317.3	MLE Sd (bias corrected)	245.3

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.951	nu hat (KM)	693.9
Approximate Chi Square Value (693.91, α)	633.8	Adjusted Chi Square Value (693.91, β)	633.6
95% Gamma Approximate KM-UCL (use when n \geq 50)	240.4	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	240.5

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	176.1
Maximum	1700	Median	139
SD	192.2	CV	1.091
k hat (MLE)	0.681	k star (bias corrected MLE)	0.677
Theta hat (MLE)	258.6	Theta star (bias corrected MLE)	260.1
nu hat (MLE)	497.2	nu star (bias corrected)	494.4
MLE Mean (bias corrected)	176.1	MLE Sd (bias corrected)	214
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (494.45, α)	443.9	Adjusted Chi Square Value (494.45, β)	443.7
95% Gamma Approximate UCL (use when n \geq 50)	196.2	95% Gamma Adjusted UCL (use when n $<$ 50)	196.3

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0504	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0823	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	190.2	Mean in Log Scale	5.019
SD in Original Scale	183	SD in Log Scale	0.608
95% t UCL (assumes normality of ROS data)	206	95% Percentile Bootstrap UCL	206.2
95% BCA Bootstrap UCL	208.6	95% Bootstrap t UCL	208.5
95% H-UCL (Log ROS)	193.1		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.999	95% H-UCL (KM -Log)	241.9
KM SD (logged)	0.889	95% Critical H Value (KM-Log)	2.04
KM Standard Error of Mean (logged)	0.0757		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2202	Mean in Log Scale	6.082
SD in Original Scale	5789	SD in Log Scale	1.551
95% t UCL (Assumes normality)	2702	95% H-Stat UCL	1805
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	245	95% GROS Approximate Gamma UCL	196.2
95% Approximate Gamma KM-UCL	240.4		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***4-methyl-2-pentanone (methyl isobutyl ketone)***108-10-1***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	#####
Number of Detects	4	Number of Non-Detects	168
Number of Distinct Detects	4	Number of Distinct Non-Detects	165
Minimum Detect	5.40E-04	Minimum Non-Detect	0.00163
Maximum Detect	0.0277	Maximum Non-Detect	0.766
Variance Detects	1.80E-04	Percent Non-Detects	97.67%
Mean Detects	0.00759	SD Detects	0.0134
Median Detects	0.00106	CV Detects	1.767
Skewness Detects	1.994	Kurtosis Detects	3.979

Mean of Logged Detects	-6.25	SD of Logged Detects	1.832
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.656	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.425	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00108	Standard Error of Mean	3.61E-04
SD	0.00228	95% KM (BCA) UCL	N/A
95% KM (t) UCL	0.00167	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	0.00167	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	0.00216	95% KM Chebyshev UCL	0.00265
97.5% KM Chebyshev UCL	0.00333	99% KM Chebyshev UCL	0.00466
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.66	Anderson-Darling GOF Test	
5% A-D Critical Value	0.685	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.39	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.411	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.469	k star (bias corrected MLE)	0.284
Theta hat (MLE)	0.0162	Theta star (bias corrected MLE)	0.0267
nu hat (MLE)	3.751	nu star (bias corrected)	2.271
MLE Mean (bias corrected)	0.00759	MLE Sd (bias corrected)	0.0142
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.222	nu hat (KM)	76.33
Approximate Chi Square Value (76.33, α)	57.21	Adjusted Chi Square Value (76.33, β)	57.07
95% Gamma Approximate KM-UCL (use when n>=50)	0.00143	95% Gamma Adjusted KM-UCL (use when n<50)	0.00144
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	5.40E-04	Mean	0.00994
Maximum	0.0277	Median	0.01
SD	0.00181	CV	0.182
k hat (MLE)	15.49	k star (bias corrected MLE)	15.23
Theta hat (MLE)	6.42E-04	Theta star (bias corrected MLE)	6.53E-04
nu hat (MLE)	5330	nu star (bias corrected)	5238
MLE Mean (bias corrected)	0.00994	MLE Sd (bias corrected)	0.00255
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (N/A, α)	5071	Adjusted Chi Square Value (N/A, β)	5070
95% Gamma Approximate UCL (use when n>=50)	0.0103	95% Gamma Adjusted UCL (use when n<50)	N/A
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.809	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.305	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.001	Mean in Log Scale	-7.062
SD in Original Scale	0.00205	SD in Log Scale	29.10%
95% t UCL (assumes normality of ROS data)	0.00126	95% Percentile Bootstrap UCL	0.00132
95% BCA Bootstrap UCL	0.00148	95% Bootstrap t UCL	0.00495
95% H-UCL (Log ROS)	9.29E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.112	95% H-UCL (KM -Log)	0.00102
KM SD (logged)	0.54	95% Critical H Value (KM-Log)	1.834
KM Standard Error of Mean (logged)	0.301		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0187	Mean in Log Scale	-5.421
SD in Original Scale	0.0458	SD in Log Scale	1.416
95% t UCL (Assumes normality)	0.0245	95% H-Stat UCL	0.0159
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			

95% KM (t) UCL	0.00167	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***4-methyl-2-pentanone (methyl isobutyl ketone)***108-10-1***t***ug/kg)			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	60
Number of Detects	4	Number of Non-Detects	168
Number of Distinct Detects	4	Number of Distinct Non-Detects	57
Minimum Detect	5.8	Minimum Non-Detect	15
Maximum Detect	540	Maximum Non-Detect	7200
Variance Detects	70517	Percent Non-Detects	97.67%
Mean Detects	141.7	SD Detects	265.6
Median Detects	10.55	CV Detects	1.874
Skewness Detects	1.998	Kurtosis Detects	3.995
Mean of Logged Detects	3.141	SD of Logged Detects	2.145
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.642	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.433	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	11.96	Standard Error of Mean	4.86
SD	44.64	95% KM (BCA) UCL	N/A
95% KM (t) UCL	20	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	19.95	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	26.54	95% KM Chebyshev UCL	33.14
97.5% KM Chebyshev UCL	42.31	99% KM Chebyshev UCL	60.32
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.718	Anderson-Darling GOF Test	
5% A-D Critical Value	0.696	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.413	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.415	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.368	k star (bias corrected MLE)	0.259
Theta hat (MLE)	385.1	Theta star (bias corrected MLE)	547.9
nu hat (MLE)	2.944	nu star (bias corrected)	2.069
MLE Mean (bias corrected)	141.7	MLE Sd (bias corrected)	278.7
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0717	nu hat (KM)	24.68
Approximate Chi Square Value (24.68, α)	14.37	Adjusted Chi Square Value (24.68, β)	14.3
95% Gamma Approximate KM-UCL (use when n \geq 50)	20.54	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	20.64
Gamma (KM) may not be used when k hat (KM) is $<$ 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $>$ 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as $<$ 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	15.87
Maximum	540	Median	0.01
SD	49.44	CV	3.115
k hat (MLE)	0.16	k star (bias corrected MLE)	0.161
Theta hat (MLE)	99.4	Theta star (bias corrected MLE)	98.72
nu hat (MLE)	54.93	nu star (bias corrected)	55.3
MLE Mean (bias corrected)	15.87	MLE Sd (bias corrected)	39.58
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (55.30, α)	39.21	Adjusted Chi Square Value (55.30, β)	39.1
95% Gamma Approximate UCL (use when n \geq 50)	22.38	95% Gamma Adjusted UCL (use when n $<$ 50)	N/A
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.773	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.33	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	14.18	Mean in Log Scale	2.08

SD in Original Scale	41.64	SD in Log Scale	0.908
95% t UCL (assumes normality of ROS data)	19.44	95% Percentile Bootstrap UCL	20.31
95% BCA Bootstrap UCL	23.94	95% Bootstrap t UCL	32.44
95% H-UCL (Log ROS)	13.98		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	2.044	95% H-UCL (KM -Log)	9.616
KM SD (logged)	0.536	95% Critical H Value (KM-Log)	1.832
KM Standard Error of Mean (logged)	0.233		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	196.3	Mean in Log Scale	3.509
SD in Original Scale	499.5	SD in Log Scale	1.557
95% t UCL (Assumes normality)	259.2	95% H-Stat UCL	154.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	20	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***4-methyl dibenzothiophene***7372-88-5***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	298
		Number of Missing Observations	0
Minimum	0.00377	Mean	0.0661
Maximum	1.141	Median	0.0233
SD	0.133	Std. Error of Mean	0.00768
Coefficient of Variation	2.014	Skewness	4.627
Normal GOF Test			
Shapiro Wilk Test Statistic	0.437	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.326	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.0788	95% Adjusted-CLT UCL (Chen-1995)	0.0809
		95% Modified-t UCL (Johnson-1978)	0.0791
Gamma GOF Test			
A-D Test Statistic	25.89	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.793	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.216	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.054	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.824	k star (bias corrected MLE)	0.818
Theta hat (MLE)	0.0802	Theta star (bias corrected MLE)	0.0808
nu hat (MLE)	494.5	nu star (bias corrected)	490.9
MLE Mean (bias corrected)	0.0661	MLE Sd (bias corrected)	0.0731
		Approximate Chi Square Value (0.05)	440.5
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	440.3
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.0736	95% Adjusted Gamma UCL (use when n<50)	0.0737
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.89	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.131	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-5.581	Mean of logged Data	-3.434
Maximum of Logged Data	0.132	SD of logged Data	0.995

Assuming Lognormal Distribution			
95% H-UCL	0.0598	90% Chebyshev (MVUE) UCL	0.0638
95% Chebyshev (MVUE) UCL	0.0689	97.5% Chebyshev (MVUE) UCL	0.0758
99% Chebyshev (MVUE) UCL	0.0895		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.0787	95% Jackknife UCL	0.0788
95% Standard Bootstrap UCL	0.0786	95% Bootstrap-t UCL	0.0822
95% Hall's Bootstrap UCL	0.0814	95% Percentile Bootstrap UCL	0.0789
95% BCA Bootstrap UCL	0.081		
90% Chebyshev(Mean, Sd) UCL	0.0891	95% Chebyshev(Mean, Sd) UCL	0.0996
97.5% Chebyshev(Mean, Sd) UCL	0.114	99% Chebyshev(Mean, Sd) UCL	0.143
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.0996		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***4-methyldibenzothiophene***7372-88-5***t***ug/kg)			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	265
		Number of Missing Observations	0
Minimum	17.1	Mean	699.4
Maximum	16200	Median	199.5
SD	1855	Std. Error of Mean	107.1
Coefficient of Variation	2.653	Skewness	5.644
Normal GOF Test			
Shapiro Wilk Test Statistic	0.363	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.357	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	876.1	95% Adjusted-CLT UCL (Chen-1995)	912.8
		95% Modified-t UCL (Johnson-1978)	881.9
Gamma GOF Test			
A-D Test Statistic	22.14	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.814	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.187	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0548	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.574	k star (bias corrected MLE)	0.571
Theta hat (MLE)	1218	Theta star (bias corrected MLE)	1225
nu hat (MLE)	344.6	nu star (bias corrected)	342.5
MLE Mean (bias corrected)	699.4	MLE Sd (bias corrected)	925.7
		Approximate Chi Square Value (0.05)	300.6
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	300.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	796.8	95% Adjusted Gamma UCL (use when n<50)	797.3
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.938	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0775	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.839	Mean of logged Data	5.467
Maximum of Logged Data	9.693	SD of logged Data	1.258
Assuming Lognormal Distribution			
95% H-UCL	621	90% Chebyshev (MVUE) UCL	670.4
95% Chebyshev (MVUE) UCL	738.3	97.5% Chebyshev (MVUE) UCL	832.6
99% Chebyshev (MVUE) UCL	1018		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs			
95% CLT UCL	875.6	95% Jackknife UCL	876.1
95% Standard Bootstrap UCL	873	95% Bootstrap-t UCL	937.1
95% Hall's Bootstrap UCL	932.3	95% Percentile Bootstrap UCL	893.2
95% BCA Bootstrap UCL	922		
90% Chebyshev(Mean, Sd) UCL	1021	95% Chebyshev(Mean, Sd) UCL	1166
97.5% Chebyshev(Mean, Sd) UCL	1368	99% Chebyshev(Mean, Sd) UCL	1765

Suggested UCL to Use
95% Chebyshev (Mean, Sd) UCL 1166

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***4-methylphenanthrene & 9-methylphenanthrene***mphnanthrn4_9***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	300	Number of Distinct Observations	298
		Number of Missing Observations	0
Minimum	0.0101	Mean	0.146
Maximum	1.88	Median	0.0701
SD	0.258	Std. Error of Mean	0.0149
Coefficient of Variation	1.765	Skewness	4.454

Normal GOF Test
Shapiro Wilk Test Statistic 0.443 Shapiro Wilk GOF Test
5% Shapiro Wilk P Value 0 Data Not Normal at 5% Significance Level
Lilliefors Test Statistic 0.307 Lilliefors GOF Test
5% Lilliefors Critical Value 0.0512 Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level

Assuming Normal Distribution
95% Normal UCL 95% UCLs (Adjusted for Skewness)
95% Student's-t UCL 0.171 95% Adjusted-CLT UCL (Chen-1995) 0.175
95% Modified-t UCL (Johnson-1978) 0.171

Gamma GOF Test
A-D Test Statistic 22.46 Anderson-Darling Gamma GOF Test
5% A-D Critical Value 0.783 Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic 0.214 Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value 0.0536 Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics
k hat (MLE) 1.033 k star (bias corrected MLE) 1.024
Theta hat (MLE) 0.141 Theta star (bias corrected MLE) 0.143
nu hat (MLE) 619.5 nu star (bias corrected) 614.7
MLE Mean (bias corrected) 0.146 MLE Sd (bias corrected) 0.144
Approximate Chi Square Value (0.05) 558.2
Adjusted Level of Significance 0.0492 Adjusted Chi Square Value 557.9

Assuming Gamma Distribution
95% Approximate Gamma UCL (use when n>=50)) 0.161 95% Adjusted Gamma UCL (use when n<50) 0.161

Lognormal GOF Test
Shapiro Wilk Test Statistic 0.909 Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value 0 Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic 0.133 Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value 0.0512 Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level

Lognormal Statistics
Minimum of Logged Data -4.596 Mean of logged Data -2.48
Maximum of Logged Data 0.631 SD of logged Data 0.886

Assuming Lognormal Distribution
95% H-UCL 0.138 90% Chebyshev (MVUE) UCL 0.146
95% Chebyshev (MVUE) UCL 0.156 97.5% Chebyshev (MVUE) UCL 0.17
99% Chebyshev (MVUE) UCL 0.198

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs			
95% CLT UCL	0.171	95% Jackknife UCL	0.171

95% Standard Bootstrap UCL	0.171	95% Bootstrap-t UCL	0.175
95% Hall's Bootstrap UCL	0.176	95% Percentile Bootstrap UCL	0.172
95% BCA Bootstrap UCL	0.176		
90% Chebyshev(Mean, Sd) UCL	0.191	95% Chebyshev(Mean, Sd) UCL	0.211
97.5% Chebyshev(Mean, Sd) UCL	0.239	99% Chebyshev(Mean, Sd) UCL	0.294
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.211		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***4-methylphenanthrene & 9-methylphenanthrene***mphnanthr4_9***t***ug/kg)

General Statistics			
Total Number of Observations	300	Number of Distinct Observations	256
		Number of Missing Observations	0
Minimum	37.3	Mean	1508
Maximum	42900	Median	560
SD	3831	Std. Error of Mean	221.2
Coefficient of Variation	2.541	Skewness	6.61
Normal GOF Test			
Shapiro Wilk Test Statistic	0.365	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.351	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1872	95% Adjusted-CLT UCL (Chen-1995)	1962
		95% Modified-t UCL (Johnson-1978)	1887
Gamma GOF Test			
A-D Test Statistic	21.16	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.804	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.22	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0545	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.677	k star (bias corrected MLE)	0.672
Theta hat (MLE)	2.23E+03	Theta star (bias corrected MLE)	2242
nu hat (MLE)	406.1	nu star (bias corrected)	403.4
MLE Mean (bias corrected)	1508	MLE Sd (bias corrected)	1839
		Approximate Chi Square Value (0.05)	357.8
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	357.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	1699	95% Adjusted Gamma UCL (use when n<50)	1700
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	4.58E-11	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0913	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.619	Mean of logged Data	6.421
Maximum of Logged Data	10.67	SD of logged Data	1.139
Assuming Lognormal Distribution			
95% H-UCL	1365	90% Chebyshev (MVUE) UCL	1466
95% Chebyshev (MVUE) UCL	1599	97.5% Chebyshev (MVUE) UCL	1784
99% Chebyshev (MVUE) UCL	2147		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1871	95% Jackknife UCL	#####
95% Standard Bootstrap UCL	1872	95% Bootstrap-t UCL	2024
95% Hall's Bootstrap UCL	2089	95% Percentile Bootstrap UCL	1895
95% BCA Bootstrap UCL	2006		
90% Chebyshev(Mean, Sd) UCL	2171	95% Chebyshev(Mean, Sd) UCL	2472
97.5% Chebyshev(Mean, Sd) UCL	2889	99% Chebyshev(Mean, Sd) UCL	3708

Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	2472	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***acenaphthene***83-32-9***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 364
Number of Detects	361	Number of Non-Detects 5
Number of Distinct Detects	359	Number of Distinct Non-Detects 5
Minimum Detect	0.00893	Minimum Non-Detect 0.583
Maximum Detect	4.518	Maximum Non-Detect 0.795
Variance Detects	0.169	Percent Non-Detects 1.37%
Mean Detects	0.161	SD Detects 0.41
Median Detects	0.0513	CV Detects 2.547
Skewness Detects	6.672	Kurtosis Detects 54.4
Mean of Logged Detects	-2.675	SD of Logged Detects 1.05
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.355	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.357	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.16	Standard Error of Mean 0.0213
SD	0.407	95% KM (BCA) UCL 0.196
95% KM (t) UCL	0.195	95% KM (Percentile Bootstrap) UCL 0.197
95% KM (z) UCL	0.195	95% KM Bootstrap t UCL 0.209
90% KM Chebyshev UCL	0.224	95% KM Chebyshev UCL 0.253
97.5% KM Chebyshev UCL	0.293	99% KM Chebyshev UCL 0.372
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	34.02	Anderson-Darling GOF Test
5% A-D Critical Value	0.801	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.23	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0499	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.71	k star (bias corrected MLE) 0.706
Theta hat (MLE)	0.227	Theta star (bias corrected MLE) 0.228
nu hat (MLE)	512.7	nu star (bias corrected) 509.8
MLE Mean (bias corrected)	0.161	MLE Sd (bias corrected) 0.192
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.155	nu hat (KM) 113.2
Approximate Chi Square Value (113.15, α)	89.59	Adjusted Chi Square Value (113.15, β) 89.51
95% Gamma Approximate KM-UCL (use when n>=50)	0.202	95% Gamma Adjusted KM-UCL (use when n<50) 0.202
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00893	Mean 0.159
Maximum	4.518	Median 0.0511
SD	0.408	CV 2.56
k hat (MLE)	0.709	k star (bias corrected MLE) 0.705
Theta hat (MLE)	0.225	Theta star (bias corrected MLE) 0.226
nu hat (MLE)	519.2	nu star (bias corrected) 516.3
MLE Mean (bias corrected)	0.159	MLE Sd (bias corrected) 0.19
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (516.29, α)	464.6	Adjusted Chi Square Value (516.29, β) 464.4
95% Gamma Approximate UCL (use when n>=50)	0.177	95% Gamma Adjusted UCL (use when n<50) 0.177
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.145	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.16	Mean in Log Scale -2.676
SD in Original Scale	0.408	SD in Log Scale 1.042
95% t UCL (assumes normality of ROS data)	0.195	95% Percentile Bootstrap UCL 0.197

95% BCA Bootstrap UCL	0.205	95% Bootstrap t UCL	0.207
95% H-UCL (Log ROS)	0.133		

DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	0.164	Mean in Log Scale	-2.653
SD in Original Scale	0.408	SD in Log Scale	1.059
95% t UCL (Assumes normality)	0.199	95% H-Stat UCL	0.139
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (Chebyshev) UCL	0.253

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***acenaphthene***83-32-9***t***ug/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	303
Number of Detects	361	Number of Non-Detects	5
Number of Distinct Detects	298	Number of Distinct Non-Detects	5
Minimum Detect	15	Minimum Non-Detect	6600
Maximum Detect	68010	Maximum Non-Detect	7500
Variance Detects	32514014	Percent Non-Detects	1.37%
Mean Detects	1787	SD Detects	5702
Median Detects	433	CV Detects	3.191
Skewness Detects	7.322	Kurtosis Detects	65.79
Mean of Logged Detects	6.252	SD of Logged Detects	1.317

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.311	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.378	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1774	Standard Error of Mean	296.2
SD	5658	95% KM (BCA) UCL	2313
95% KM (t) UCL	2262	95% KM (Percentile Bootstrap) UCL	2296
95% KM (z) UCL	2.26E+03	95% KM Bootstrap t UCL	2482
90% KM Chebyshev UCL	2662	95% KM Chebyshev UCL	3065
97.5% KM Chebyshev UCL	3624	99% KM Chebyshev UCL	4721

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	29.83	Anderson-Darling GOF Test
5% A-D Critical Value	0.821	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.214	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0506	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.512	k star (bias corrected MLE)	0.51
Theta hat (MLE)	3491	Theta star (bias corrected MLE)	3507
nu hat (MLE)	369.6	nu star (bias corrected)	367.9
MLE Mean (bias corrected)	1787	MLE Sd (bias corrected)	2504

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0983	nu hat (KM)	71.95
Approximate Chi Square Value (71.95, α)	53.42	Adjusted Chi Square Value (71.95, β)	53.35
95% Gamma Approximate KM-UCL (use when n>=50)	2389	95% Gamma Adjusted KM-UCL (use when n<50)	2392
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean
Maximum	68010	Median
SD	5667	CV
k hat (MLE)	0.468	k star (bias corrected MLE)
Theta hat (MLE)	3765	Theta star (bias corrected MLE)
nu hat (MLE)	342.7	nu star (bias corrected)
MLE Mean (bias corrected)	1763	MLE Sd (bias corrected)

	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (341.22, α)	299.4 Adjusted Chi Square Value (341.22, β)	299.3
95% Gamma Approximate UCL (use when $n \geq 50$)	2009 95% Gamma Adjusted UCL (use when $n < 50$)	2010
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0871 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1769 Mean in Log Scale	6.251
SD in Original Scale	5665 SD in Log Scale	1.308
95% t UCL (assumes normality of ROS data)	2258 95% Percentile Bootstrap UCL	2288
95% BCA Bootstrap UCL	2455 95% Bootstrap t UCL	2458
95% H-UCL (Log ROS)	1438	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	1811 Mean in Log Scale	6.278
SD in Original Scale	5666 SD in Log Scale	1.327
95% t UCL (Assumes normality)	2299 95% H-Stat UCL	1519
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	3065	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***acenaphthylene***208-96-8***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	363
	Number of Missing Observations	0
Minimum	0.00686 Mean	0.121
Maximum	1.592 Median	0.0758
SD	0.149 Std. Error of Mean	0.00778
Coefficient of Variation	1.227 Skewness	4.453
Normal GOF Test		
Shapiro Wilk Test Statistic	0.641 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.223 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.134 95% Adjusted-CLT UCL (Chen-1995)	0.136
	95% Modified-t UCL (Johnson-1978)	0.134
Gamma GOF Test		
A-D Test Statistic	5.502 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.778 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0904 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0487 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	1.252 k star (bias corrected MLE)	1.243
Theta hat (MLE)	0.0969 Theta star (bias corrected MLE)	0.0976
nu hat (MLE)	916.2 nu star (bias corrected)	910
MLE Mean (bias corrected)	0.121 MLE Sd (bias corrected)	0.109
	Approximate Chi Square Value (0.05)	841
Adjusted Level of Significance	0.0493 Adjusted Chi Square Value	840.7
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when $n \geq 50$)	0.131 95% Adjusted Gamma UCL (use when $n < 50$)	0.131
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.985 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.53 Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0309 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463 Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level		

Lognormal Statistics			
Minimum of Logged Data	-4.982	Mean of logged Data	-2.559
Maximum of Logged Data	0.465	SD of logged Data	0.93
Assuming Lognormal Distribution			
95% H-UCL	0.132	90% Chebyshev (MVUE) UCL	0.14
95% Chebyshev (MVUE) UCL	0.149	97.5% Chebyshev (MVUE) UCL	0.162
99% Chebyshev (MVUE) UCL	0.188		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.134	95% Jackknife UCL	0.134
95% Standard Bootstrap UCL	0.134	95% Bootstrap-t UCL	0.137
95% Hall's Bootstrap UCL	0.137	95% Percentile Bootstrap UCL	0.134
95% BCA Bootstrap UCL	0.137		
90% Chebyshev(Mean, Sd) UCL	0.145	95% Chebyshev(Mean, Sd) UCL	15.50%
97.5% Chebyshev(Mean, Sd) UCL	0.17	99% Chebyshev(Mean, Sd) UCL	0.199
Suggested UCL to Use			
95% H-UCL	0.132		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_VALUE (studyarea***acenaphthylene***208-96-8***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	305
		Number of Missing Observations	0
Minimum	21.3	Mean	1111
Maximum	15600	Median	483
SD	1794	Std. Error of Mean	93.78
Coefficient of Variation	1.614	Skewness	4.486
Normal GOF Test			
Shapiro Wilk Test Statistic	0.538	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.272	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1266	95% Adjusted-CLT UCL (Chen-1995)	1289
		95% Modified-t UCL (Johnson-1978)	1270
Gamma GOF Test			
A-D Test Statistic	14.71	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.789	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.16	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0491	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.91	k star (bias corrected MLE)	0.904
Theta hat (MLE)	1.22E+03	Theta star (bias corrected MLE)	1229
nu hat (MLE)	665.8	nu star (bias corrected)	661.7
MLE Mean (bias corrected)	1111	MLE Sd (bias corrected)	1169
		Approximate Chi Square Value (0.05)	603
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	602.8
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1219	95% Adjusted Gamma UCL (use when n<50)	1220
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.965	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	6.01E-06	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0785	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	3.059	Mean of logged Data	6.371
Maximum of Logged Data	9.655	SD of logged Data	1.067
Assuming Lognormal Distribution			
95% H-UCL	1167	90% Chebyshev (MVUE) UCL	1245
95% Chebyshev (MVUE) UCL	1342	97.5% Chebyshev (MVUE) UCL	1477
99% Chebyshev (MVUE) UCL	1742		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1266	95% Jackknife UCL	1266
95% Standard Bootstrap UCL	1265	95% Bootstrap-t UCL	1305
95% Hall's Bootstrap UCL	1299	95% Percentile Bootstrap UCL	1271
95% BCA Bootstrap UCL	1296		
90% Chebyshev(Mean, Sd) UCL	1393	95% Chebyshev(Mean, Sd) UCL	1520
97.5% Chebyshev(Mean, Sd) UCL	1697	99% Chebyshev(Mean, Sd) UCL	2044
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1520		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***acetone***67-64-1***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	172
Number of Detects	138	Number of Non-Detects	34
Number of Distinct Detects	1.38E+02	Number of Distinct Non-Detects	34
Minimum Detect	0.0046	Minimum Non-Detect	0.00569
Maximum Detect	0.266	Maximum Non-Detect	1.668
Variance Detects	0.0018	Percent Non-Detects	19.77%
Mean Detects	0.0581	SD Detects	4.24%
Median Detects	0.0499	CV Detects	0.73
Skewness Detects	1.339	Kurtosis Detects	3.235
Mean of Logged Detects	-3.146	SD of Logged Detects	0.845
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.903	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	9.74E-13	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.104	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0754	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0556	Standard Error of Mean	0.00356
SD	0.0427	95% KM (BCA) UCL	0.062
95% KM (t) UCL	0.0615	95% KM (Percentile Bootstrap) UCL	0.0615
95% KM (z) UCL	0.0615	95% KM Bootstrap t UCL	0.0618
90% KM Chebyshev UCL	0.0663	95% KM Chebyshev UCL	0.0711
97.5% KM Chebyshev UCL	0.0778	99% KM Chebyshev UCL	0.091
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.544	Anderson-Darling GOF Test	
5% A-D Critical Value	0.767	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0557	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0809	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.813	k star (bias corrected MLE)	1.778
Theta hat (MLE)	0.032	Theta star (bias corrected MLE)	0.0327
nu hat (MLE)	500.3	nu star (bias corrected)	490.7
MLE Mean (bias corrected)	0.0581	MLE Sd (bias corrected)	0.0436
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.698	nu hat (KM)	584.1
Approximate Chi Square Value (584.10, α)	529	Adjusted Chi Square Value (584.10, β)	528.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.0614	95% Gamma Adjusted KM-UCL (use when n<50)	0.0614
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			

Minimum	0.0046	Mean	0.0542
Maximum	0.266	Median	0.0456
SD	0.0393	CV	0.726
k hat (MLE)	1.933	k star (bias corrected MLE)	1.903
Theta hat (MLE)	0.028	Theta star (bias corrected MLE)	0.0285
nu hat (MLE)	665	nu star (bias corrected)	654.7
MLE Mean (bias corrected)	0.0542	MLE Sd (bias corrected)	0.0393
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (654.71, α)	596.4	Adjusted Chi Square Value (654.71, β)	595.9
95% Gamma Approximate UCL (use when n>=50)	0.0595	95% Gamma Adjusted UCL (use when n<50)	0.0595

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0981	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0754	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0532	Mean in Log Scale	-3.224
SD in Original Scale	0.0396	SD in Log Scale	0.82
95% t UCL (assumes normality of ROS data)	0.0582	95% Percentile Bootstrap UCL	0.0584
95% BCA Bootstrap UCL	0.0586	95% Bootstrap t UCL	0.0589
95% H-UCL (Log ROS)	0.0633		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0979	Mean in Log Scale	-2.933
SD in Original Scale	0.125	SD in Log Scale	1.156
95% t UCL (Assumes normality)	0.114	95% H-Stat UCL	0.127
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	0.062	95% GROS Approximate Gamma UCL	0.0595
95% Approximate Gamma KM-UCL	0.0614		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***acetone***67-64-1***t***ug/kg)

General Statistics

Total Number of Observations	172	Number of Distinct Observations	94
Number of Detects	138	Number of Non-Detects	34
Number of Distinct Detects	73	Number of Distinct Non-Detects	26
Minimum Detect	34	Minimum Non-Detect	70
Maximum Detect	2500	Maximum Non-Detect	21000
Variance Detects	110128	Percent Non-Detects	19.77%
Mean Detects	403.5	SD Detects	331.9
Median Detects	335	CV Detects	0.822
Skewness Detects	2.576	Kurtosis Detects	11.51
Mean of Logged Detects	5.704	SD of Logged Detects	0.813

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.812	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.162	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0754	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	387.1	Standard Error of Mean	27.57
SD	330.8	95% KM (BCA) UCL	434.7
95% KM (t) UCL	432.7	95% KM (Percentile Bootstrap) UCL	433
95% KM (z) UCL	432.4	95% KM Bootstrap t UCL	437.8
90% KM Chebyshev UCL	469.8	95% KM Chebyshev UCL	507.2
97.5% KM Chebyshev UCL	559.2	99% KM Chebyshev UCL	661.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.417	Anderson-Darling GOF Test	
5% A-D Critical Value	0.767	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0667	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0808	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	1.835	k star (bias corrected MLE)	1.8
Theta hat (MLE)	219.9	Theta star (bias corrected MLE)	224.2

nu hat (MLE)	506.5	nu star (bias corrected)	496.8
MLE Mean (bias corrected)	403.5	MLE Sd (bias corrected)	300.8
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.369	nu hat (KM)	471
Approximate Chi Square Value (470.98, α)	421.7	Adjusted Chi Square Value (470.98, β)	421.3
95% Gamma Approximate KM-UCL (use when n>=50)	432.3	95% Gamma Adjusted KM-UCL (use when n<50)	432.7
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	374.5
Maximum	2500	Median	309.3
SD	310.1	CV	0.828
k hat (MLE)	1.353	k star (bias corrected MLE)	1.334
Theta hat (MLE)	276.7	Theta star (bias corrected MLE)	280.8
nu hat (MLE)	465.6	nu star (bias corrected)	458.8
MLE Mean (bias corrected)	374.5	MLE Sd (bias corrected)	324.3
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (458.80, α)	410.1	Adjusted Chi Square Value (458.80, β)	409.8
95% Gamma Approximate UCL (use when n>=50)	419	95% Gamma Adjusted UCL (use when n<50)	419.4
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0824	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0754	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	372.7	Mean in Log Scale	5.637
SD in Original Scale	307.8	SD in Log Scale	0.785
95% t UCL (assumes normality of ROS data)	411.5	95% Percentile Bootstrap UCL	409.1
95% BCA Bootstrap UCL	413.5	95% Bootstrap t UCL	419.1
95% H-UCL (Log ROS)	430.5		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	5.625	95% H-UCL (KM -Log)	462.6
KM SD (logged)	0.867	95% Critical H Value (KM-Log)	2.055
KM Standard Error of Mean (logged)	0.0725		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	883.1	Mean in Log Scale	5.997
SD in Original Scale	1470	SD in Log Scale	1.217
95% t UCL (Assumes normality)	1069	95% H-Stat UCL	1051
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	434.7	95% GROS Approximate Gamma UCL	419
95% Approximate Gamma KM-UCL	432.3		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***acetophenone***98-86-2***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
Number of Detects	148	Number of Non-Detects	218
Number of Distinct Detects	147	Number of Distinct Non-Detects	218
Minimum Detect	0.00388	Minimum Non-Detect	0.0187
Maximum Detect	0.563	Maximum Non-Detect	6.045
Variance Detects	0.00274	Percent Non-Detects	59.56%
Mean Detects	0.0343	SD Detects	0.0524
Median Detects	0.022	CV Detects	1.527
Skewness Detects	7.416	Kurtosis Detects	71.21
Mean of Logged Detects	-3.777	SD of Logged Detects	0.808
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.458	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.288	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0728	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0296 Standard Error of Mean	0.00247
SD	0.0389 95% KM (BCA) UCL	0.0343
95% KM (t) UCL	0.0337 95% KM (Percentile Bootstrap) UCL	0.034
95% KM (z) UCL	0.0337 95% KM Bootstrap t UCL	0.035
90% KM Chebyshev UCL	0.037 95% KM Chebyshev UCL	0.0404
97.5% KM Chebyshev UCL	0.0451 99% KM Chebyshev UCL	0.0542
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.878 Anderson-Darling GOF Test	
5% A-D Critical Value	0.774 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.174 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0787 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.38 k star (bias corrected MLE)	1.357
Theta hat (MLE)	2.48E-02 Theta star (bias corrected MLE)	0.0253
nu hat (MLE)	408.6 nu star (bias corrected)	401.6
MLE Mean (bias corrected)	0.0343 MLE Sd (bias corrected)	0.0294
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.578 nu hat (KM)	423.3
Approximate Chi Square Value (423.30, α)	376.6 Adjusted Chi Square Value (423.30, β)	376.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.0333 95% Gamma Adjusted KM-UCL (use when n<50)	0.0333
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00388 Mean	0.025
Maximum	0.563 Median	0.0197
SD	0.0342 CV	1.365
k hat (MLE)	2.494 k star (bias corrected MLE)	2.475
Theta hat (MLE)	0.01 Theta star (bias corrected MLE)	0.0101
nu hat (MLE)	1825 nu star (bias corrected)	1812
MLE Mean (bias corrected)	0.025 MLE Sd (bias corrected)	0.0159
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1714 Adjusted Chi Square Value (N/A, β)	1713
95% Gamma Approximate UCL (use when n>=50)	0.0264 95% Gamma Adjusted UCL (use when n<50)	0.0264
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0966 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0728 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0262 Mean in Log Scale	-3.839
SD in Original Scale	0.0339 SD in Log Scale	0.518
95% t UCL (assumes normality of ROS data)	0.0291 95% Percentile Bootstrap UCL	0.0293
95% BCA Bootstrap UCL	0.0308 95% Bootstrap t UCL	0.0313
95% H-UCL (Log ROS)	0.0258	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.231 Mean in Log Scale	-2.764
SD in Original Scale	0.543 SD in Log Scale	1.41
95% t UCL (Assumes normality)	0.278 95% H-Stat UCL	20.50%
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.0337 95% KM (% Bootstrap) UCL	0.034
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***acetophenone***98-86-2***t***ug/kg)		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	278
Number of Detects	148 Number of Non-Detects	218
Number of Distinct Detects	126 Number of Distinct Non-Detects	162
Minimum Detect	22.1 Minimum Non-Detect	96.7
Maximum Detect	2700 Maximum Non-Detect	71570
Variance Detects	157475 Percent Non-Detects	59.56%

Mean Detects	311.3	SD Detects	396.8
Median Detects	174.5	CV Detects	1.275
Skewness Detects	3.139	Kurtosis Detects	12.76
Mean of Logged Detects	5.18	SD of Logged Detects	1.057
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.669	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.233	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0728	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	248.4	Standard Error of Mean	21.01
SD	319.5	95% KM (BCA) UCL	284.7
95% KM (t) UCL	283.1	95% KM (Percentile Bootstrap) UCL	283.4
95% KM (z) UCL	283	95% KM Bootstrap t UCL	288.8
90% KM Chebyshev UCL	311.5	95% KM Chebyshev UCL	340
97.5% KM Chebyshev UCL	379.7	99% KM Chebyshev UCL	457.5
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.392	Anderson-Darling GOF Test	
5% A-D Critical Value	0.783	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.101	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0793	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.027	k star (bias corrected MLE)	1.01
Theta hat (MLE)	303.2	Theta star (bias corrected MLE)	308.1
nu hat (MLE)	303.9	nu star (bias corrected)	299
MLE Mean (bias corrected)	311.3	MLE Sd (bias corrected)	309.7
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.605	nu hat (KM)	442.6
Approximate Chi Square Value (442.62, α)	394.8	Adjusted Chi Square Value (442.62, β)	394.7
95% Gamma Approximate KM-UCL (use when n>=50)	278.5	95% Gamma Adjusted KM-UCL (use when n<50)	278.6
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	207
Maximum	2700	Median	142.9
SD	276.6	CV	1.336
k hat (MLE)	0.788	k star (bias corrected MLE)	0.783
Theta hat (MLE)	262.8	Theta star (bias corrected MLE)	264.3
nu hat (MLE)	576.6	nu star (bias corrected)	573.2
MLE Mean (bias corrected)	207	MLE Sd (bias corrected)	233.9
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (573.24, α)	518.7	Adjusted Chi Square Value (573.24, β)	518.5
95% Gamma Approximate UCL (use when n>=50)	228.8	95% Gamma Adjusted UCL (use when n<50)	228.9
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0527	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0728	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	212	Mean in Log Scale	5.012
SD in Original Scale	268.9	SD in Log Scale	0.748
95% t UCL (assumes normality of ROS data)	235.1	95% Percentile Bootstrap UCL	235.8
95% BCA Bootstrap UCL	239.9	95% Bootstrap t UCL	240.2
95% H-UCL (Log ROS)	214.4		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.992	95% H-UCL (KM -Log)	270.8
KM SD (logged)	0.998	95% Critical H Value (KM-Log)	2.125
KM Standard Error of Mean (logged)	0.0757		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2260	Mean in Log Scale	6.164
SD in Original Scale	5768	SD in Log Scale	1.583
95% t UCL (Assumes normality)	2757	95% H-Stat UCL	2077
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL		284.7	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***acid volatile sulfide***avs***t***umol/g)			
General Statistics			
Total Number of Observations	84	Number of Distinct Observations	80
		Number of Missing Observations	0
Minimum	11.1	Mean	202.5
Maximum	608	Median	186.5
SD	126.1	Std. Error of Mean	13.76
Coefficient of Variation	0.623	Skewness	0.734
Normal GOF Test			
Shapiro Wilk Test Statistic	0.937	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	5.69E-04	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.111	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0967	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	225.4	95% Adjusted-CLT UCL (Chen-1995)	226.3
		95% Modified-t UCL (Johnson-1978)	225.6
Gamma GOF Test			
A-D Test Statistic	0.553	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.762	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0723	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0986	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.325	k star (bias corrected MLE)	2.25
Theta hat (MLE)	87.08	Theta star (bias corrected MLE)	89.98
nu hat (MLE)	390.7	nu star (bias corrected)	378.1
MLE Mean (bias corrected)	202.5	MLE Sd (bias corrected)	135
		Approximate Chi Square Value (0.05)	334
Adjusted Level of Significance	0.0471	Adjusted Chi Square Value	333.3
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	229.2	95% Adjusted Gamma UCL (use when n<50)	229.7
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.955	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0162	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0958	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0967	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.407	Mean of logged Data	5.081
Maximum of Logged Data	6.41	SD of logged Data	0.744
Assuming Lognormal Distribution			
95% H-UCL	250.4	90% Chebyshev (MVUE) UCL	268.6
95% Chebyshev (MVUE) UCL	294.6	97.5% Chebyshev (MVUE) UCL	330.7
99% Chebyshev (MVUE) UCL	401.5		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	225.1	95% Jackknife UCL	225.4
95% Standard Bootstrap UCL	224.8	95% Bootstrap-t UCL	226.1
95% Hall's Bootstrap UCL	226.9	95% Percentile Bootstrap UCL	224.8
95% BCA Bootstrap UCL	228.3		
90% Chebyshev(Mean, Sd) UCL	243.8	95% Chebyshev(Mean, Sd) UCL	262.5
97.5% Chebyshev(Mean, Sd) UCL	288.4	99% Chebyshev(Mean, Sd) UCL	339.4
Suggested UCL to Use			
95% Approximate Gamma UCL	229.2		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)			

and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***aldrin***309-00-2***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	246	Number of Distinct Observations 218
Number of Detects	89	Number of Non-Detects 157
Number of Distinct Detects	80	Number of Distinct Non-Detects 144
Minimum Detect	8.77E-06	Minimum Non-Detect 4.18E-06
Maximum Detect	0.0128	Maximum Non-Detect 0.0142
Variance Detects	7.96E-06	Percent Non-Detects 63.82%
Mean Detects	9.34E-04	SD Detects 0.00282
Median Detects	1.00E-04	CV Detects 3.023
Skewness Detects	3.552	Kurtosis Detects 11.37
Mean of Logged Detects	-9.114	SD of Logged Detects 1.805
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.35	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.439	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0939	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	3.73E-04	Standard Error of Mean 1.14E-04
SD	0.00176	95% KM (BCA) UCL 5.58E-04
95% KM (t) UCL	5.60E-04	95% KM (Percentile Bootstrap) UCL 5.74E-04
95% KM (z) UCL	5.60E-04	95% KM Bootstrap t UCL 6.50E-04
90% KM Chebyshev UCL	7.14E-04	95% KM Chebyshev UCL 8.68E-04
97.5% KM Chebyshev UCL	0.00108	99% KM Chebyshev UCL 0.0015
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	10.41	Anderson-Darling GOF Test
5% A-D Critical Value	0.863	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.283	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.103	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.319	k star (bias corrected MLE) 0.316
Theta hat (MLE)	0.00292	Theta star (bias corrected MLE) 0.00295
nu hat (MLE)	56.84	nu star (bias corrected) 56.26
MLE Mean (bias corrected)	9.34E-04	MLE Sd (bias corrected) 0.00166
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.045	nu hat (KM) 22.13
Approximate Chi Square Value (22.13, α)	12.44	Adjusted Chi Square Value (22.13, β) 12.4
95% Gamma Approximate KM-UCL (use when n>=50)	6.63E-04	95% Gamma Adjusted KM-UCL (use when n<50) 6.65E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	8.77E-06	Mean 0.00672
Maximum	0.0128	Median 0.01
SD	0.00468	CV 0.697
k hat (MLE)	0.513	k star (bias corrected MLE) 0.509
Theta hat (MLE)	0.0131	Theta star (bias corrected MLE) 0.0132
nu hat (MLE)	252.3	nu star (bias corrected) 250.6
MLE Mean (bias corrected)	0.00672	MLE Sd (bias corrected) 0.00942
		Adjusted Level of Significance (β) 0.049
Approximate Chi Square Value (250.57, α)	214.9	Adjusted Chi Square Value (250.57, β) 214.7
95% Gamma Approximate UCL (use when n>=50)	0.00783	95% Gamma Adjusted UCL (use when n<50) 0.00784
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0967	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0939	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3.49E-04	Mean in Log Scale -10.39
SD in Original Scale	0.00175	SD in Log Scale 1.568
95% t UCL (assumes normality of ROS data)	5.33E-04	95% Percentile Bootstrap UCL 5.42E-04
95% BCA Bootstrap UCL	6.11E-04	95% Bootstrap t UCL 6.24E-04
95% H-UCL (Log ROS)	1.37E-04	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	

Mean in Original Scale	9.09E-04	Mean in Log Scale	-9.018
SD in Original Scale	0.00217	SD in Log Scale	1.991
95% t UCL (Assumes normality)	0.00114	95% H-Stat UCL	0.00132
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (Chebyshev) UCL	8.68E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***aldrin***309-00-2***t***ug/kg)

General Statistics			
Total Number of Observations	246	Number of Distinct Observations	195
Number of Detects	89	Number of Non-Detects	157
Number of Distinct Detects	79	Number of Distinct Non-Detects	131
Minimum Detect	0.04	Minimum Non-Detect	0.022
Maximum Detect	159.3	Maximum Non-Detect	123.4
Variance Detects	1087	Percent Non-Detects	63.82%
Mean Detects	9.977	SD Detects	32.97
Median Detects	0.7	CV Detects	3.304
Skewness Detects	3.805	Kurtosis Detects	13.39
Mean of Logged Detects	-0.19	SD of Logged Detects	1.967

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.324
5% Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.457
5% Lilliefors Critical Value	0.0939
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.877	Standard Error of Mean	1.316
SD	20.38	95% KM (BCA) UCL	6.268
95% KM (t) UCL	6.05	95% KM (Percentile Bootstrap) UCL	6.178
95% KM (z) UCL	6.041	95% KM Bootstrap t UCL	7.011
90% KM Chebyshev UCL	7.825	95% KM Chebyshev UCL	9.613
97.5% KM Chebyshev UCL	12.1	99% KM Chebyshev UCL	16.97

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	10.66
5% A-D Critical Value	0.877
K-S Test Statistic	0.257
5% K-S Critical Value	0.103
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.28	k star (bias corrected MLE)	0.278
Theta hat (MLE)	35.62	Theta star (bias corrected MLE)	35.87
nu hat (MLE)	49.85	nu star (bias corrected)	49.5
MLE Mean (bias corrected)	9.977	MLE Sd (bias corrected)	18.92

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0362	nu hat (KM)	17.8
Approximate Chi Square Value (17.80, α)	9.248	Adjusted Chi Square Value (17.80, β)	9.212
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	7.462	95% Gamma Adjusted KM-UCL (use when $n < 50$)	7.492
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.616
Maximum	159.3	Median	0.01
SD	20.33	CV	5.623
k hat (MLE)	0.175	k star (bias corrected MLE)	0.176
Theta hat (MLE)	20.66	Theta star (bias corrected MLE)	20.6
nu hat (MLE)	86.09	nu star (bias corrected)	86.37
MLE Mean (bias corrected)	3.616	MLE Sd (bias corrected)	8.63
		Adjusted Level of Significance (β)	0.049
Approximate Chi Square Value (86.37, α)	65.95	Adjusted Chi Square Value (86.37, β)	65.85
95% Gamma Approximate UCL (use when $n \geq 50$)	4.736	95% Gamma Adjusted UCL (use when $n < 50$)	4.743

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0796	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0939	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.683	Mean in Log Scale	-1.607
SD in Original Scale	20.32	SD in Log Scale	1.724
95% t UCL (assumes normality of ROS data)	5.822	95% Percentile Bootstrap UCL	6.011
95% BCA Bootstrap UCL	6.456	95% Bootstrap t UCL	7.348
95% H-UCL (Log ROS)	1.217		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.46	95% H-UCL (KM -Log)	1.682
KM SD (logged)	1.809	95% Critical H Value (KM-Log)	2.965
KM Standard Error of Mean (logged)	0.144		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	9.009	Mean in Log Scale	-0.127
SD in Original Scale	23.91	SD in Log Scale	2.126
95% t UCL (Assumes normality)	11.53	95% H-Stat UCL	13.25
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	9.613		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***aluminum***7429-90-5***t***mg/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	224
		Number of Missing Observations	0
Minimum	761	Mean	11221
Maximum	23900	Median	11800
SD	4201	Std. Error of Mean	219.6
Coefficient of Variation	0.374	Skewness	-0.234
Normal GOF Test			
Shapiro Wilk Test Statistic	0.972	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.00139	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0631	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	11583	95% Adjusted-CLT UCL (Chen-1995)	11579
		95% Modified-t UCL (Johnson-1978)	11582
Gamma GOF Test			
A-D Test Statistic	7.264	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.106	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	5.248	k star (bias corrected MLE)	5.207
Theta hat (MLE)	2138	Theta star (bias corrected MLE)	2155
nu hat (MLE)	3842	nu star (bias corrected)	3812
MLE Mean (bias corrected)	11221	MLE Sd (bias corrected)	4917
		Approximate Chi Square Value (0.05)	3669
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	3669
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	11656	95% Adjusted Gamma UCL (use when n<50)	11658
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.867	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.126	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			

Lognormal Statistics		
Minimum of Logged Data	6.635 Mean of logged Data	9.227
Maximum of Logged Data	10.08 SD of logged Data	0.5
Assuming Lognormal Distribution		
95% H-UCL	12082 90% Chebyshev (MVUE) UCL	12481
95% Chebyshev (MVUE) UCL	12915 97.5% Chebyshev (MVUE) UCL	13517
99% Chebyshev (MVUE) UCL	14700	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	11582 95% Jackknife UCL	11583
95% Standard Bootstrap UCL	11579 95% Bootstrap-t UCL	11573
95% Hall's Bootstrap UCL	11583 95% Percentile Bootstrap UCL	11576
95% BCA Bootstrap UCL	11583	
90% Chebyshev(Mean, Sd) UCL	11879 95% Chebyshev(Mean, Sd) UCL	12178
97.5% Chebyshev(Mean, Sd) UCL	12592 99% Chebyshev(Mean, Sd) UCL	13405
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	12178	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.		
RESULT_VALUE (studyarea***aluminum***7429-90-5***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	366
	Number of Missing Observations	0
Minimum	43.49 Mean	1744
Maximum	6018 Median	1434
SD	1212 Std. Error of Mean	63.38
Coefficient of Variation	0.695 Skewness	1.058
Normal GOF Test		
Shapiro Wilk Test Statistic	0.886 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.128 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1849 95% Adjusted-CLT UCL (Chen-1995)	1852
	95% Modified-t UCL (Johnson-1978)	1849
Gamma GOF Test		
A-D Test Statistic	1.79 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.765 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0601 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0481 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	2.096 k star (bias corrected MLE)	2.08
Theta hat (MLE)	8.32E+02 Theta star (bias corrected MLE)	838.4
nu hat (MLE)	1534 nu star (bias corrected)	1523
MLE Mean (bias corrected)	1744 MLE Sd (bias corrected)	1209
	Approximate Chi Square Value (0.05)	1433
Adjusted Level of Significance	0.0493 Adjusted Chi Square Value	1433
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	1853 95% Adjusted Gamma UCL (use when n<50)	1854
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.964 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.92E-06 Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0405 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463 Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level		
Lognormal Statistics		

Minimum of Logged Data	3.772	Mean of logged Data	7.207
Maximum of Logged Data	8.702	SD of logged Data	0.766
Assuming Lognormal Distribution			
95% H-UCL	1956	90% Chebyshev (MVUE) UCL	2053
95% Chebyshev (MVUE) UCL	2164	97.5% Chebyshev (MVUE) UCL	2319
99% Chebyshev (MVUE) UCL	2622		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1848	95% Jackknife UCL	1849
95% Standard Bootstrap UCL	1850	95% Bootstrap-t UCL	1856
95% Hall's Bootstrap UCL	1857	95% Percentile Bootstrap UCL	1847
95% BCA Bootstrap UCL	1852		
90% Chebyshev(Mean, Sd) UCL	1934	95% Chebyshev(Mean, Sd) UCL	2020
97.5% Chebyshev(Mean, Sd) UCL	2140	99% Chebyshev(Mean, Sd) UCL	2375
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	2020		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***ammonia as nitrogen***7664-41-7n***t***mg/kg)			
General Statistics			
Total Number of Observations	351	Number of Distinct Observations	115
Number of Detects	306	Number of Non-Detects	45
Number of Distinct Detects	110	Number of Distinct Non-Detects	17
Minimum Detect	13	Minimum Non-Detect	8.5
Maximum Detect	1500	Maximum Non-Detect	48
Variance Detects	23026	Percent Non-Detects	12.82%
Mean Detects	141	SD Detects	151.7
Median Detects	92.5	CV Detects	1.076
Skewness Detects	4.18	Kurtosis Detects	27.57
Mean of Logged Detects	4.593	SD of Logged Detects	0.822
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.666	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.202	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0506	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	124.9	Standard Error of Mean	7.891
SD	147.6	95% KM (BCA) UCL	137
95% KM (t) UCL	138	95% KM (Percentile Bootstrap) UCL	138.1
95% KM (z) UCL	137.9	95% KM Bootstrap t UCL	140.1
90% KM Chebyshev UCL	148.6	95% KM Chebyshev UCL	159.3
97.5% KM Chebyshev UCL	174.2	99% KM Chebyshev UCL	203.5
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.312	Anderson-Darling GOF Test	
5% A-D Critical Value	0.771	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0996	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0526	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.549	k star (bias corrected MLE)	1.536
Theta hat (MLE)	91.06	Theta star (bias corrected MLE)	91.83
nu hat (MLE)	947.9	nu star (bias corrected)	940
MLE Mean (bias corrected)	141	MLE Sd (bias corrected)	#####
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.717	nu hat (KM)	503.2
Approximate Chi Square Value (503.19, α)	452.2	Adjusted Chi Square Value (503.19, β)	452
95% Gamma Approximate KM-UCL (use when n>=50)	139	95% Gamma Adjusted KM-UCL (use when n<50)	139.1
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	123
Maximum	1500	Median	77

SD	149.3	CV	1.214
k hat (MLE)	0.46	k star (bias corrected MLE)	0.458
Theta hat (MLE)	267.2	Theta star (bias corrected MLE)	268.4
nu hat (MLE)	323	nu star (bias corrected)	321.6
MLE Mean (bias corrected)	123	MLE Sd (bias corrected)	181.7
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (321.62, α)	281.1	Adjusted Chi Square Value (321.62, β)	280.9
95% Gamma Approximate UCL (use when n>=50)	140.7	95% Gamma Adjusted UCL (use when n<50)	140.8
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0503	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0506	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	125.3	Mean in Log Scale	4.371
SD in Original Scale	147.5	SD in Log Scale	0.968
95% t UCL (assumes normality of ROS data)	138.3	95% Percentile Bootstrap UCL	139.1
95% BCA Bootstrap UCL	140.6	95% Bootstrap t UCL	140.5
95% H-UCL (Log ROS)	140.9		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.346	95% H-UCL (KM -Log)	144.3
KM SD (logged)	1.011	95% Critical H Value (KM-Log)	2.133
KM Standard Error of Mean (logged)	0.0556		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	124.5	Mean in Log Scale	4.318
SD in Original Scale	148.1	SD in Log Scale	1.055
95% t UCL (Assumes normality)	137.5	95% H-Stat UCL	147.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	137		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***ammonia as nitrogen***7664-41-7n***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	351	Number of Distinct Observations	345
Number of Detects	306	Number of Non-Detects	45
Number of Distinct Detects	303	Number of Distinct Non-Detects	42
Minimum Detect	1.667	Minimum Non-Detect	1.694
Maximum Detect	112.6	Maximum Non-Detect	8.095
Variance Detects	308.6	Percent Non-Detects	12.82%
Mean Detects	18.28	SD Detects	17.57
Median Detects	13.63	CV Detects	0.961
Skewness Detects	2.621	Kurtosis Detects	8.522
Mean of Logged Detects	2.571	SD of Logged Detects	0.811
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.726	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.191	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0506	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	16.3	Standard Error of Mean	0.919
SD	17.18	95% KM (BCA) UCL	17.83
95% KM (t) UCL	17.81	95% KM (Percentile Bootstrap) UCL	17.75
95% KM (z) UCL	17.81	95% KM Bootstrap t UCL	17.94
90% KM Chebyshev UCL	19.05	95% KM Chebyshev UCL	20.3
97.5% KM Chebyshev UCL	22.04	99% KM Chebyshev UCL	25.44
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.41	Anderson-Darling GOF Test	
5% A-D Critical Value	0.77	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0816	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0526	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			

k hat (MLE)	1.642	k star (bias corrected MLE)	1.628
Theta hat (MLE)	11.13	Theta star (bias corrected MLE)	11.23
nu hat (MLE)	1005	nu star (bias corrected)	996.2
MLE Mean (bias corrected)	18.28	MLE Sd (bias corrected)	14.33
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.901	nu hat (KM)	632.2
Approximate Chi Square Value (632.20, α)	574.9	Adjusted Chi Square Value (632.20, β)	574.6
95% Gamma Approximate KM-UCL (use when n>=50)	17.92	95% Gamma Adjusted KM-UCL (use when n<50)	17.93
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	15.94
Maximum	112.6	Median	11.27
SD	17.5	CV	1.097
k hat (MLE)	0.574	k star (bias corrected MLE)	0.571
Theta hat (MLE)	27.77	Theta star (bias corrected MLE)	27.92
nu hat (MLE)	403	nu star (bias corrected)	400.9
MLE Mean (bias corrected)	15.94	MLE Sd (bias corrected)	21.1
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (400.91, α)	355.5	Adjusted Chi Square Value (400.91, β)	355.3
95% Gamma Approximate UCL (use when n>=50)	17.98	95% Gamma Adjusted UCL (use when n<50)	17.99
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0324	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0506	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	16.33	Mean in Log Scale	2.381
SD in Original Scale	17.17	SD in Log Scale	0.911
95% t UCL (assumes normality of ROS data)	17.84	95% Percentile Bootstrap UCL	17.86
95% BCA Bootstrap UCL	17.93	95% Bootstrap t UCL	18.06
95% H-UCL (Log ROS)	18.1		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	2.363	95% H-UCL (KM -Log)	18.41
KM SD (logged)	0.943	95% Critical H Value (KM-Log)	2.08
KM Standard Error of Mean (logged)	0.0511		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	16.23	Mean in Log Scale	2.336
SD in Original Scale	17.25	SD in Log Scale	0.985
95% t UCL (Assumes normality)	17.74	95% H-Stat UCL	18.79
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	17.83		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***ammonia***7664-41-7***t***mg/kg)			
General Statistics			
Total Number of Observations	31	Number of Distinct Observations	31
Number of Detects	18	Number of Non-Detects	13
Number of Distinct Detects	18	Number of Distinct Non-Detects	13
Minimum Detect	222.4	Minimum Non-Detect	96.61
Maximum Detect	1346	Maximum Non-Detect	334
Variance Detects	96713	Percent Non-Detects	41.94%
Mean Detects	456.5	SD Detects	311
Median Detects	362.4	CV Detects	0.681
Skewness Detects	2.118	Kurtosis Detects	4.052
Mean of Logged Detects	5.973	SD of Logged Detects	0.52
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.707	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.295	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	311.4	Standard Error of Mean	53.46
SD	288.1	95% KM (BCA) UCL	413.4
95% KM (t) UCL	402.2	95% KM (Percentile Bootstrap) UCL	408.2
95% KM (z) UCL	399.4	95% KM Bootstrap t UCL	438.9
90% KM Chebyshev UCL	471.8	95% KM Chebyshev UCL	544.4
97.5% KM Chebyshev UCL	645.3	99% KM Chebyshev UCL	843.3
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.102	Anderson-Darling GOF Test	
5% A-D Critical Value	0.744	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.215	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.205	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.471	k star (bias corrected MLE)	2.93
Theta hat (MLE)	131.5	Theta star (bias corrected MLE)	#####
nu hat (MLE)	125	nu star (bias corrected)	105.5
MLE Mean (bias corrected)	456.5	MLE Sd (bias corrected)	266.7
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.168	nu hat (KM)	72.43
Approximate Chi Square Value (72.43, α)	53.84	Adjusted Chi Square Value (72.43, β)	52.95
95% Gamma Approximate KM-UCL (use when n>=50)	419	95% Gamma Adjusted KM-UCL (use when n<50)	426.1
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	267.2
Maximum	1346	Median	231.4
SD	325.7	CV	1.219
k hat (MLE)	0.219	k star (bias corrected MLE)	0.219
Theta hat (MLE)	1223	Theta star (bias corrected MLE)	1221
nu hat (MLE)	13.55	nu star (bias corrected)	13.57
MLE Mean (bias corrected)	267.2	MLE Sd (bias corrected)	571.1
		Adjusted Level of Significance (β)	0.0413
Approximate Chi Square Value (13.57, α)	6.28	Adjusted Chi Square Value (13.57, β)	6.005
95% Gamma Approximate UCL (use when n>=50)	577.5	95% Gamma Adjusted UCL (use when n<50)	604
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.88	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.173	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	316.7	Mean in Log Scale	5.482
SD in Original Scale	287.9	SD in Log Scale	0.711
95% t UCL (assumes normality of ROS data)	404.5	95% Percentile Bootstrap UCL	407.1
95% BCA Bootstrap UCL	427.4	95% Bootstrap t UCL	461.9
95% H-UCL (Log ROS)	407.3		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	5.421	95% H-UCL (KM -Log)	415.6
KM SD (logged)	0.775	95% Critical H Value (KM-Log)	2.177
KM Standard Error of Mean (logged)	0.146		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	305.2	Mean in Log Scale	5.35
SD in Original Scale	296.9	SD in Log Scale	0.878
95% t UCL (Assumes normality)	395.7	95% H-Stat UCL	446.8
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	402.2	95% KM (% Bootstrap) UCL	408.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***ammonia***7664-41-7***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	31	Number of Distinct Observations	31
Number of Detects	18	Number of Non-Detects	13
Number of Distinct Detects	18	Number of Distinct Non-Detects	13
Minimum Detect	13.94	Minimum Non-Detect	9.879
Maximum Detect	146.2	Maximum Non-Detect	33.6
Variance Detects	1087	Percent Non-Detects	41.94%
Mean Detects	44.31	SD Detects	32.97
Median Detects	35.62	CV Detects	0.744
Skewness Detects	2.073	Kurtosis Detects	4.78
Mean of Logged Detects	3.596	SD of Logged Detects	0.613
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.774	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.228	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	30.65	Standard Error of Mean	5.444
SD	29.34	95% KM (BCA) UCL	41.35
95% KM (t) UCL	39.89	95% KM (Percentile Bootstrap) UCL	39.42
95% KM (z) UCL	39.61	95% KM Bootstrap t UCL	44.98
90% KM Chebyshev UCL	46.98	95% KM Chebyshev UCL	54.38
97.5% KM Chebyshev UCL	64.65	99% KM Chebyshev UCL	84.82
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.544	Anderson-Darling GOF Test	
5% A-D Critical Value	0.748	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.163	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.205	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.712	k star (bias corrected MLE)	229.70%
Theta hat (MLE)	16.34	Theta star (bias corrected MLE)	19.29
nu hat (MLE)	97.62	nu star (bias corrected)	82.68
MLE Mean (bias corrected)	44.31	MLE Sd (bias corrected)	29.24
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.091	nu hat (KM)	67.66
Approximate Chi Square Value (67.66, α)	49.73	Adjusted Chi Square Value (67.66, β)	48.87
95% Gamma Approximate KM-UCL (use when n>=50)	41.71	95% Gamma Adjusted KM-UCL (use when n<50)	42.44
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	25.73
Maximum	146.2	Median	20.49
SD	33.31	CV	1.295
k hat (MLE)	0.232	k star (bias corrected MLE)	0.231
Theta hat (MLE)	110.7	Theta star (bias corrected MLE)	111.2
nu hat (MLE)	14.41	nu star (bias corrected)	14.35
MLE Mean (bias corrected)	25.73	MLE Sd (bias corrected)	53.48
		Adjusted Level of Significance (β)	0.0413
Approximate Chi Square Value (14.35, α)	6.813	Adjusted Chi Square Value (14.35, β)	6.525
95% Gamma Approximate UCL (use when n>=50)	54.21	95% Gamma Adjusted UCL (use when n<50)	56.6
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.962	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.897	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.119	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.209	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	29.83	Mean in Log Scale	3.034
SD in Original Scale	30.3	SD in Log Scale	0.826
95% t UCL (assumes normality of ROS data)	39.06	95% Percentile Bootstrap UCL	39.27
95% BCA Bootstrap UCL	41.45	95% Bootstrap t UCL	44.89
95% H-UCL (Log ROS)	40.93		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	3.103	95% H-UCL (KM -Log)	39.94
KM SD (logged)	0.757	95% Critical H Value (KM-Log)	2.158
KM Standard Error of Mean (logged)	0.144		

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	29.73	Mean in Log Scale 3.001
SD in Original Scale	30.44	SD in Log Scale 0.886
95% t UCL (Assumes normality)	39.01	95% H-Stat UCL 43.12
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Detected Data appear Gamma Distributed at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	39.89	95% GROS Adjusted Gamma UCL 56.6
95% Adjusted Gamma KM-UCL	42.44	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***anthracene***120-12-7***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	366	Number of Distinct Observations 363
Number of Detects	365	Number of Non-Detects 1
Number of Distinct Detects	362	Number of Distinct Non-Detects 1
Minimum Detect	0.0177	Minimum Non-Detect 0.787
Maximum Detect	4.545	Maximum Non-Detect 0.787
Variance Detects	0.204	Percent Non-Detects 0.27%
Mean Detects	0.304	SD Detects 0.451
Median Detects	0.165	CV Detects 1.486
Skewness Detects	5.165	Kurtosis Detects 34.79
Mean of Logged Detects	-1.632	SD of Logged Detects 0.827

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.501	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.272	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0464	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.303	Standard Error of Mean 0.0236
SD	0.45	95% KM (BCA) UCL 0.344
95% KM (t) UCL	0.342	95% KM (Percentile Bootstrap) UCL 0.344
95% KM (z) UCL	0.342	95% KM Bootstrap t UCL 0.349
90% KM Chebyshev UCL	0.374	95% KM Chebyshev UCL 0.406
97.5% KM Chebyshev UCL	0.451	99% KM Chebyshev UCL 0.538

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	17.92	Anderson-Darling GOF Test
5% A-D Critical Value	0.778	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.16	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0487	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.277	k star (bias corrected MLE) 1.268
Theta hat (MLE)	0.238	Theta star (bias corrected MLE) 0.239
nu hat (MLE)	931.9	nu star (bias corrected) 925.6
MLE Mean (bias corrected)	0.304	MLE Sd (bias corrected) 0.27

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.454	nu hat (KM) 332.5
Approximate Chi Square Value (332.55, α)	291.3	Adjusted Chi Square Value (332.55, β) 291.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.346	95% Gamma Adjusted KM-UCL (use when n<50) 0.347

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0177	Mean 0.303
Maximum	4.545	Median 0.164
SD	0.451	CV 1.486
k hat (MLE)	1.279	k star (bias corrected MLE) 1.27
Theta hat (MLE)	0.237	Theta star (bias corrected MLE) 0.239
nu hat (MLE)	936	nu star (bias corrected) 929.6
MLE Mean (bias corrected)	0.303	MLE Sd (bias corrected) 0.269
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (929.65, α)	859.9	Adjusted Chi Square Value (929.65, β) 859.6
95% Gamma Approximate UCL (use when n>=50)	0.328	95% Gamma Adjusted UCL (use when n<50) 0.328

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0964	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.03E-01	Mean in Log Scale	-1.632
SD in Original Scale	0.451	SD in Log Scale	0.826
95% t UCL (assumes normality of ROS data)	0.342	95% Percentile Bootstrap UCL	0.344
95% BCA Bootstrap UCL	0.353	95% Bootstrap t UCL	0.35
95% H-UCL (Log ROS)	0.3		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.304	Mean in Log Scale	-1.63
SD in Original Scale	0.451	SD in Log Scale	0.827
95% t UCL (Assumes normality)	0.343	95% H-Stat UCL	0.301
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.344		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***anthracene***120-12-7***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	287
Number of Detects	365	Number of Non-Detects	1
Number of Distinct Detects	286	Number of Distinct Non-Detects	1
Minimum Detect	98.3	Minimum Non-Detect	7500
Maximum Detect	48411	Maximum Non-Detect	7500
Variance Detects	31285409	Percent Non-Detects	0.27%
Mean Detects	2860	SD Detects	5593
Median Detects	1330	CV Detects	1.956
Skewness Detects	5.36	Kurtosis Detects	34.06
Mean of Logged Detects	7.298	SD of Logged Detects	1.003
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.426	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.311	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2857	Standard Error of Mean	292
SD	5579	95% KM (BCA) UCL	3364
95% KM (t) UCL	3338	95% KM (Percentile Bootstrap) UCL	3366
95% KM (z) UCL	3337	95% KM Bootstrap t UCL	3459
90% KM Chebyshev UCL	3733	95% KM Chebyshev UCL	4130
97.5% KM Chebyshev UCL	4681	99% KM Chebyshev UCL	5763
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	20.63	Anderson-Darling GOF Test	
5% A-D Critical Value	0.79	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.176	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0492	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.887	k star (bias corrected MLE)	0.881
Theta hat (MLE)	3225	Theta star (bias corrected MLE)	3245
nu hat (MLE)	647.4	nu star (bias corrected)	643.4
MLE Mean (bias corrected)	2860	MLE Sd (bias corrected)	3047
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.262	nu hat (KM)	192
Approximate Chi Square Value (191.96, α)	160.9	Adjusted Chi Square Value (191.96, β)	160.8
95% Gamma Approximate KM-UCL (use when n>=50)	3408	95% Gamma Adjusted KM-UCL (use when n<50)	3411
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			

For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	98.3 Mean	2855
Maximum	48411 Median	1325
SD	5587 CV	1.957
k hat (MLE)	0.888 k star (bias corrected MLE)	0.882
Theta hat (MLE)	3216 Theta star (bias corrected MLE)	3236
nu hat (MLE)	649.8 nu star (bias corrected)	645.8
MLE Mean (bias corrected)	2855 MLE Sd (bias corrected)	3040
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (645.78, α)	587.8 Adjusted Chi Square Value (645.78, β)	587.6
95% Gamma Approximate UCL (use when $n \geq 50$)	3137 95% Gamma Adjusted UCL (use when $n < 50$)	3138
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0763 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2856 Mean in Log Scale	7.298
SD in Original Scale	5586 SD in Log Scale	1.002
95% t UCL (assumes normality of ROS data)	3338 95% Percentile Bootstrap UCL	3350
95% BCA Bootstrap UCL	3423 95% Bootstrap t UCL	3480
95% H-UCL (Log ROS)	2729	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	2863 Mean in Log Scale	7.301
SD in Original Scale	5586 SD in Log Scale	1.003
95% t UCL (Assumes normality)	3344 95% H-Stat UCL	2740
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	4130	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***antimony***7440-36-0***t***mg/kg)		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	324
	Number of Missing Observations	0
Minimum	0.078 Mean	5.408
Maximum	110 Median	3.72
SD	7.874 Std. Error of Mean	0.412
Coefficient of Variation	1.456 Skewness	7.699
Normal GOF Test		
Shapiro Wilk Test Statistic	0.539 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.254 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	6.086 95% Adjusted-CLT UCL (Chen-1995)	6.261
	95% Modified-t UCL (Johnson-1978)	6.114
Gamma GOF Test		
A-D Test Statistic	2.355 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.785 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0651 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.049 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	0.984 k star (bias corrected MLE)	0.978
Theta hat (MLE)	5.50E+00 Theta star (bias corrected MLE)	5.532
nu hat (MLE)	720.2 nu star (bias corrected)	715.6
MLE Mean (bias corrected)	5.408 MLE Sd (bias corrected)	5.469
	Approximate Chi Square Value (0.05)	654.5
Adjusted Level of Significance	0.0493 Adjusted Chi Square Value	654.3

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	5.912	95% Adjusted Gamma UCL (use when n<50)	5.914
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.963	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	7.81E-07	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0869	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.551	Mean of logged Data	1.1
Maximum of Logged Data	4.7	SD of logged Data	1.152
Assuming Lognormal Distribution			
95% H-UCL	6.682	90% Chebyshev (MVUE) UCL	7.159
95% Chebyshev (MVUE) UCL	7.768	97.5% Chebyshev (MVUE) UCL	8.613
99% Chebyshev (MVUE) UCL	10.27		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	6.085	95% Jackknife UCL	6.086
95% Standard Bootstrap UCL	6.097	95% Bootstrap-t UCL	6.406
95% Hall's Bootstrap UCL	6.901	95% Percentile Bootstrap UCL	6.099
95% BCA Bootstrap UCL	6.343		
90% Chebyshev(Mean, Sd) UCL	6.642	95% Chebyshev(Mean, Sd) UCL	7.202
97.5% Chebyshev(Mean, Sd) UCL	7.978	99% Chebyshev(Mean, Sd) UCL	9.503
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	7.202		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***antimony***7440-36-0***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	363
		Number of Missing Observations	0
Minimum	0.0574	Mean	0.579
Maximum	9.821	Median	0.426
SD	0.761	Std. Error of Mean	0.0398
Coefficient of Variation	1.314	Skewness	7.239
Normal GOF Test			
Shapiro Wilk Test Statistic	0.511	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.247	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.645	95% Adjusted-CLT UCL (Chen-1995)	0.66
		95% Modified-t UCL (Johnson-1978)	0.647
Gamma GOF Test			
A-D Test Statistic	3.39	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.773	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0646	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0484	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.475	k star (bias corrected MLE)	1.465
Theta hat (MLE)	0.393	Theta star (bias corrected MLE)	0.395
nu hat (MLE)	1080	nu star (bias corrected)	1072
MLE Mean (bias corrected)	0.579	MLE Sd (bias corrected)	0.478
		Approximate Chi Square Value (0.05)	997.1
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	996.8
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.622	95% Adjusted Gamma UCL (use when n<50)	0.623
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.977	Shapiro Wilk Lognormal GOF Test	

5% Shapiro Wilk P Value	0.0353	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0436	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.858	Mean of logged Data	-0.922
Maximum of Logged Data	2.285	SD of logged Data	0.84
Assuming Lognormal Distribution			
95% H-UCL	0.618	90% Chebyshev (MVUE) UCL	0.651
95% Chebyshev (MVUE) UCL	0.69	97.5% Chebyshev (MVUE) UCL	0.745
99% Chebyshev (MVUE) UCL	0.851		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.644	95% Jackknife UCL	0.645
95% Standard Bootstrap UCL	0.644	95% Bootstrap-t UCL	0.67
95% Hall's Bootstrap UCL	0.695	95% Percentile Bootstrap UCL	0.645
95% BCA Bootstrap UCL	0.671		
90% Chebyshev(Mean, Sd) UCL	0.698	95% Chebyshev(Mean, Sd) UCL	0.752
97.5% Chebyshev(Mean, Sd) UCL	0.827	99% Chebyshev(Mean, Sd) UCL	0.975
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.752		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***aroclor 1242***53469-21-9***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	161	Number of Distinct Observations	161
Number of Detects	130	Number of Non-Detects	31
Number of Distinct Detects	130	Number of Distinct Non-Detects	31
Minimum Detect	0.00328	Minimum Non-Detect	0.0634
Maximum Detect	0.923	Maximum Non-Detect	0.287
Variance Detects	0.0231	Percent Non-Detects	19.25%
Mean Detects	0.107	SD Detects	0.152
Median Detects	0.0485	CV Detects	1.422
Skewness Detects	3.327	Kurtosis Detects	12.91
Mean of Logged Detects	-2.827	SD of Logged Detects	1.047
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.6	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.262	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0941	Standard Error of Mean	0.011
SD	0.139	95% KM (BCA) UCL	0.112
95% KM (t) UCL	0.112	95% KM (Percentile Bootstrap) UCL	0.112
95% KM (z) UCL	0.112	95% KM Bootstrap t UCL	11.70%
90% KM Chebyshev UCL	0.127	95% KM Chebyshev UCL	0.142
97.5% KM Chebyshev UCL	0.163	99% KM Chebyshev UCL	0.204
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.085	Anderson-Darling GOF Test	
5% A-D Critical Value	0.784	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.18	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0842	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.978	k star (bias corrected MLE)	0.961
Theta hat (MLE)	0.109	Theta star (bias corrected MLE)	0.111
nu hat (MLE)	254.3	nu star (bias corrected)	249.8
MLE Mean (bias corrected)	0.107	MLE Sd (bias corrected)	0.109
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.459	nu hat (KM)	147.8
Approximate Chi Square Value (147.76, α)	120.7	Adjusted Chi Square Value (147.76, β)	120.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.115	95% Gamma Adjusted KM-UCL (use when n<50)	0.115
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00328 Mean	0.0906
Maximum	0.923 Median	0.0403
SD	0.141 CV	1.551
k hat (MLE)	0.937 k star (bias corrected MLE)	0.924
Theta hat (MLE)	0.0967 Theta star (bias corrected MLE)	0.0981
nu hat (MLE)	301.8 nu star (bias corrected)	297.5
MLE Mean (bias corrected)	0.0906 MLE Sd (bias corrected)	0.0943
	Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (297.48, α)	258.5 Adjusted Chi Square Value (297.48, β)	258.2
95% Gamma Approximate UCL (use when n>=50)	0.104 95% Gamma Adjusted UCL (use when n<50)	0.104
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.106 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0939 Mean in Log Scale	-2.907
SD in Original Scale	0.139 SD in Log Scale	0.955
95% t UCL (assumes normality of ROS data)	0.112 95% Percentile Bootstrap UCL	0.114
95% BCA Bootstrap UCL	0.117 95% Bootstrap t UCL	0.117
95% H-UCL (Log ROS)	0.101	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.0959 Mean in Log Scale	-2.871
SD in Original Scale	0.139 SD in Log Scale	0.954
95% t UCL (Assumes normality)	0.114 95% H-Stat UCL	0.105
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	0.142	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***aroclor 1242***53469-21-9***t***ug/kg)		
General Statistics		
Total Number of Observations	161 Number of Distinct Observations	102
Number of Detects	130 Number of Non-Detects	31
Number of Distinct Detects	73 Number of Distinct Non-Detects	29
Minimum Detect	55 Minimum Non-Detect	633.2
Maximum Detect	15000 Maximum Non-Detect	2501
Variance Detects	4125165 Percent Non-Detects	19.25%
Mean Detects	1032 SD Detects	2031
Median Detects	310 CV Detects	1.967
Skewness Detects	4.38 Kurtosis Detects	22.73
Mean of Logged Detects	6.043 SD of Logged Detects	1.225
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.494 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.315 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	890.4 Standard Error of Mean	146.1
SD	1844 95% KM (BCA) UCL	1175
95% KM (t) UCL	1132 95% KM (Percentile Bootstrap) UCL	1137
95% KM (z) UCL	1131 95% KM Bootstrap t UCL	#####
90% KM Chebyshev UCL	1329 95% KM Chebyshev UCL	1527
97.5% KM Chebyshev UCL	1803 99% KM Chebyshev UCL	2344
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	7.17 Anderson-Darling GOF Test	
5% A-D Critical Value	0.802 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.186 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0854 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.677	k star (bias corrected MLE) 0.667
Theta hat (MLE)	1525	Theta star (bias corrected MLE) 1549
nu hat (MLE)	176	nu star (bias corrected) 173.3
MLE Mean (bias corrected)	1032	MLE Sd (bias corrected) 1264
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.233	nu hat (KM) 75.07
Approximate Chi Square Value (75.07, α)	56.12	Adjusted Chi Square Value (75.07, β) 55.97
95% Gamma Approximate KM-UCL (use when n>=50)	1191	95% Gamma Adjusted KM-UCL (use when n<50) 1194
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 839.8
Maximum	15000	Median 250
SD	1866	CV 2.223
k hat (MLE)	0.285	k star (bias corrected MLE) 0.284
Theta hat (MLE)	2944	Theta star (bias corrected MLE) 2956
nu hat (MLE)	91.86	nu star (bias corrected) 91.48
MLE Mean (bias corrected)	839.8	MLE Sd (bias corrected) 1576
		Adjusted Level of Significance (β) 0.0485
Approximate Chi Square Value (91.48, α)	70.43	Adjusted Chi Square Value (91.48, β) 70.26
95% Gamma Approximate UCL (use when n>=50)	1091	95% Gamma Adjusted UCL (use when n<50) 1093
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.106	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0777	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	887.5	Mean in Log Scale 5.962
SD in Original Scale	1848	SD in Log Scale 1.114
95% t UCL (assumes normality of ROS data)	1128	95% Percentile Bootstrap UCL 1129
95% BCA Bootstrap UCL	1211	95% Bootstrap t UCL 1227
95% H-UCL (Log ROS)	881.7	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	931.3	Mean in Log Scale 6.069
SD in Original Scale	1838	SD in Log Scale 1.108
95% t UCL (Assumes normality)	1171	95% H-Stat UCL 973.1
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	1527	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***aroclor 1248***12672-29-6***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	161	Number of Distinct Observations 159
Number of Detects	31	Number of Non-Detects 130
Number of Distinct Detects	31	Number of Distinct Non-Detects 128
Minimum Detect	0.0529	Minimum Non-Detect 4.24E-04
Maximum Detect	2.944	Maximum Non-Detect 0.0292
Variance Detects	0.284	Percent Non-Detects 80.75%
Mean Detects	0.474	SD Detects 0.533
Median Detects	0.264	CV Detects 1.124
Skewness Detects	3.605	Kurtosis Detects 15.68
Mean of Logged Detects	-1.074	SD of Logged Detects 0.759
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.587	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.929	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.253	Lilliefors GOF Test
5% Lilliefors Critical Value	0.159	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0916	Standard Error of Mean 0.0237
SD	0.296	95% KM (BCA) UCL 0.13

95% KM (t) UCL	0.131	95% KM (Percentile Bootstrap) UCL	0.134
95% KM (z) UCL	0.131	95% KM Bootstrap t UCL	0.152
90% KM Chebyshev UCL	0.163	95% KM Chebyshev UCL	0.195
97.5% KM Chebyshev UCL	0.24	99% KM Chebyshev UCL	0.328

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.769	Anderson-Darling GOF Test	
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.209	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.16	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.674	k star (bias corrected MLE)	1.533
Theta hat (MLE)	0.283	Theta star (bias corrected MLE)	0.309
nu hat (MLE)	103.8	nu star (bias corrected)	95.05
MLE Mean (bias corrected)	0.474	MLE Sd (bias corrected)	0.383

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0956	nu hat (KM)	30.79
Approximate Chi Square Value (30.79, α)	19.11	Adjusted Chi Square Value (30.79, β)	19.03
95% Gamma Approximate KM-UCL (use when n \geq 50)	0.148	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	0.148
Gamma (KM) may not be used when k hat (KM) is $<$ 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $>$ 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as $<$ 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0994
Maximum	2.944	Median	0.01
SD	0.295	CV	2.968
k hat (MLE)	0.406	k star (bias corrected MLE)	0.403
Theta hat (MLE)	0.245	Theta star (bias corrected MLE)	0.247
nu hat (MLE)	130.8	nu star (bias corrected)	129.7
MLE Mean (bias corrected)	0.0994	MLE Sd (bias corrected)	0.157
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (129.68, α)	104.4	Adjusted Chi Square Value (129.68, β)	104.2
95% Gamma Approximate UCL (use when n \geq 50)	0.123	95% Gamma Adjusted UCL (use when n $<$ 50)	0.124

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.929	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.929	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.17	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.159	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.107	Mean in Log Scale	-3.368
SD in Original Scale	0.292	SD in Log Scale	1.175
95% t UCL (assumes normality of ROS data)	0.146	95% Percentile Bootstrap UCL	0.147
95% BCA Bootstrap UCL	0.161	95% Bootstrap t UCL	0.173
95% H-UCL (Log ROS)	0.0852		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0926	Mean in Log Scale	-5.712
SD in Original Scale	0.297	SD in Log Scale	2.405
95% t UCL (Assumes normality)	0.131	95% H-Stat UCL	0.12
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (t) UCL	0.131	95% KM (% Bootstrap) UCL	0.134

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***aroclor 1248***12672-29-6***t***ug/kg)

General Statistics			
Total Number of Observations	161	Number of Distinct Observations	96
Number of Detects	31	Number of Non-Detects	130
Number of Distinct Detects	30	Number of Distinct Non-Detects	66
Minimum Detect	563.1	Minimum Non-Detect	5.4
Maximum Detect	33990	Maximum Non-Detect	570
Variance Detects	38150352	Percent Non-Detects	80.75%

Mean Detects	5122	SD Detects	6177
Median Detects	2660	CV Detects	1.206
Skewness Detects	3.68	Kurtosis Detects	16.28
Mean of Logged Detects	8.175	SD of Logged Detects	0.795
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.572	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.929	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.273	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.159	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	990.6	Standard Error of Mean	267.9
SD	3343	95% KM (BCA) UCL	1462
95% KM (t) UCL	1434	95% KM (Percentile Bootstrap) UCL	1485
95% KM (z) UCL	1431	95% KM Bootstrap t UCL	1746
90% KM Chebyshev UCL	1794	95% KM Chebyshev UCL	2158
97.5% KM Chebyshev UCL	2663	99% KM Chebyshev UCL	#####
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.055	Anderson-Darling GOF Test	
5% A-D Critical Value	0.764	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.238	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.161	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.508	k star (bias corrected MLE)	1.384
Theta hat (MLE)	3396	Theta star (bias corrected MLE)	3701
nu hat (MLE)	93.51	nu star (bias corrected)	85.79
MLE Mean (bias corrected)	5122	MLE Sd (bias corrected)	4354
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0878	nu hat (KM)	28.27
Approximate Chi Square Value (28.27, α)	17.13	Adjusted Chi Square Value (28.27, β)	17.06
95% Gamma Approximate KM-UCL (use when n>=50)	1634	95% Gamma Adjusted KM-UCL (use when n<50)	1642
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	986.2
Maximum	33990	Median	0.01
SD	3355	CV	3.402
k hat (MLE)	0.0909	k star (bias corrected MLE)	0.0934
Theta hat (MLE)	10848	Theta star (bias corrected MLE)	10563
nu hat (MLE)	29.27	nu star (bias corrected)	30.06
MLE Mean (bias corrected)	986.2	MLE Sd (bias corrected)	3228
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (30.06, α)	18.54	Adjusted Chi Square Value (30.06, β)	18.46
95% Gamma Approximate UCL (use when n>=50)	1599	95% Gamma Adjusted UCL (use when n<50)	1606
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.929	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.197	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.159	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1169	Mean in Log Scale	5.726
SD in Original Scale	3306	SD in Log Scale	1.435
95% t UCL (assumes normality of ROS data)	1600	95% Percentile Bootstrap UCL	1628
95% BCA Bootstrap UCL	1774	95% Bootstrap t UCL	1930
95% H-UCL (Log ROS)	1149		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	997.9	Mean in Log Scale	3.231
SD in Original Scale	3352	SD in Log Scale	2.58
95% t UCL (Assumes normality)	1435	95% H-Stat UCL	1558
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1434	95% KM (% Bootstrap) UCL	1485

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***aroclor 1254***11097-69-1***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	161	Number of Distinct Observations 161
Number of Detects	154	Number of Non-Detects 7
Number of Distinct Detects	154	Number of Distinct Non-Detects 7
Minimum Detect	0.00645	Minimum Non-Detect 8.68E-04
Maximum Detect	1.506	Maximum Non-Detect 0.00767
Variance Detects	0.0665	Percent Non-Detects 4.35%
Mean Detects	0.217	SD Detects 0.258
Median Detects	0.102	CV Detects 1.186
Skewness Detects	2.265	Kurtosis Detects 6.395
Mean of Logged Detects	-2.12	SD of Logged Detects 1.113
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.732	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.233	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0714	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.208	Standard Error of Mean 0.0202
SD	0.255	95% KM (BCA) UCL 0.242
95% KM (t) UCL	0.241	95% KM (Percentile Bootstrap) UCL 24.20%
95% KM (z) UCL	0.241	95% KM Bootstrap t UCL 0.246
90% KM Chebyshev UCL	0.269	95% KM Chebyshev UCL 0.296
97.5% KM Chebyshev UCL	0.334	99% KM Chebyshev UCL 0.409
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.175	Anderson-Darling GOF Test
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.16	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0778	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.975	k star (bias corrected MLE) 0.96
Theta hat (MLE)	0.223	Theta star (bias corrected MLE) 0.227
nu hat (MLE)	300.2	nu star (bias corrected) 295.7
MLE Mean (bias corrected)	0.217	MLE Sd (bias corrected) 0.222
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.665	nu hat (KM) 214.1
Approximate Chi Square Value (214.06, α)	181.2	Adjusted Chi Square Value (214.06, β) 180.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.246	95% Gamma Adjusted KM-UCL (use when n<50) 0.246
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00645	Mean 0.208
Maximum	1.506	Median 0.092
SD	0.256	CV 1.227
k hat (MLE)	0.888	k star (bias corrected MLE) 0.875
Theta hat (MLE)	0.235	Theta star (bias corrected MLE) 0.238
nu hat (MLE)	285.8	nu star (bias corrected) 281.8
MLE Mean (bias corrected)	0.208	MLE Sd (bias corrected) 0.223
		Adjusted Level of Significance (β) 0.0485
Approximate Chi Square Value (281.82, α)	243.9	Adjusted Chi Square Value (281.82, β) 243.6
95% Gamma Approximate UCL (use when n>=50)	0.241	95% Gamma Adjusted UCL (use when n<50) 0.241
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0962	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0714	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.208	Mean in Log Scale -2.232
SD in Original Scale	0.256	SD in Log Scale 1.21
95% t UCL (assumes normality of ROS data)	0.242	95% Percentile Bootstrap UCL 0.242
95% BCA Bootstrap UCL	0.246	95% Bootstrap t UCL 0.249
95% H-UCL (Log ROS)	0.279	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.208 Mean in Log Scale	-2.31
SD in Original Scale	0.256 SD in Log Scale	1.418
95% t UCL (Assumes normality)	0.241 95% H-Stat UCL	0.361
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (Chebyshev) UCL	0.296

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***aroclor 1254***11097-69-1***t***ug/kg)

General Statistics		
Total Number of Observations	161	Number of Distinct Observations 116
Number of Detects	154	Number of Non-Detects 7
Number of Distinct Detects	110	Number of Distinct Non-Detects 6
Minimum Detect	64	Minimum Non-Detect 10
Maximum Detect	21000	Maximum Non-Detect 68
Variance Detects	10705888	Percent Non-Detects 4.35%
Mean Detects	2222	SD Detects 3272
Median Detects	750	CV Detects 1.473
Skewness Detects	2.911	Kurtosis Detects 10.88
Mean of Logged Detects	6.821	SD of Logged Detects 1.371

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.663	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.255	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0714	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2126	Standard Error of Mean 254.7
SD	3221	95% KM (BCA) UCL 2563
95% KM (t) UCL	2547	95% KM (Percentile Bootstrap) UCL 2578
95% KM (z) UCL	2545	95% KM Bootstrap t UCL 2628
90% KM Chebyshev UCL	2890	95% KM Chebyshev UCL 3236
97.5% KM Chebyshev UCL	3716	99% KM Chebyshev UCL #####

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.246	Anderson-Darling GOF Test
5% A-D Critical Value	0.802	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.155	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0789	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.685	k star (bias corrected MLE) 0.676
Theta hat (MLE)	3244	Theta star (bias corrected MLE) 3288
nu hat (MLE)	210.9	nu star (bias corrected) 208.2
MLE Mean (bias corrected)	2222	MLE Sd (bias corrected) 2703

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.436	nu hat (KM) 140.2
Approximate Chi Square Value (140.23, α)	113.9	Adjusted Chi Square Value (140.23, β) 113.7
95% Gamma Approximate KM-UCL (use when n>=50)	2618	95% Gamma Adjusted KM-UCL (use when n<50) 2623

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 2125
Maximum	21000	Median 680
SD	3232	CV 1.521
k hat (MLE)	0.478	k star (bias corrected MLE) 0.473
Theta hat (MLE)	4444	Theta star (bias corrected MLE) 4489
nu hat (MLE)	154	nu star (bias corrected) 152.4
MLE Mean (bias corrected)	2125	MLE Sd (bias corrected) 3089
		Adjusted Level of Significance (β) 0.0485
Approximate Chi Square Value (152.45, α)	124.9	Adjusted Chi Square Value (152.45, β) 124.7
95% Gamma Approximate UCL (use when n>=50)	2594	95% Gamma Adjusted UCL (use when n<50) 2599

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.1	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0714	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2127	Mean in Log Scale 6.681
SD in Original Scale	3231	SD in Log Scale 1.494
95% t UCL (assumes normality of ROS data)	2548	95% Percentile Bootstrap UCL 2568
95% BCA Bootstrap UCL	2575	95% Bootstrap t UCL 2652
95% H-UCL (Log ROS)	3322	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	2126	Mean in Log Scale 6.633
SD in Original Scale	3231	SD in Log Scale 1.616
95% t UCL (Assumes normality)	2547	95% H-Stat UCL 3987
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	3236	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***aroclor 1260***11096-82-5***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	161	Number of Distinct Observations 159
Number of Detects	7	Number of Non-Detects 154
Number of Distinct Detects	7	Number of Distinct Non-Detects 152
Minimum Detect	0.0331	Minimum Non-Detect 4.24E-04
Maximum Detect	0.412	Maximum Non-Detect 0.287
Variance Detects	0.0254	Percent Non-Detects 95.65%
Mean Detects	0.176	SD Detects 0.159
Median Detects	0.108	CV Detects 0.906
Skewness Detects	1.02	Kurtosis Detects -0.974
Mean of Logged Detects	-2.113	SD of Logged Detects 0.957
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.79	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.303	Lilliefors GOF Test
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level
Detected Data appear Approximate Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00827	Standard Error of Mean 0.00404
SD	0.0473	95% KM (BCA) UCL 0.0157
95% KM (t) UCL	0.015	95% KM (Percentile Bootstrap) UCL 0.015
95% KM (z) UCL	0.0149	95% KM Bootstrap t UCL 0.0211
90% KM Chebyshev UCL	0.0204	95% KM Chebyshev UCL 0.0259
97.5% KM Chebyshev UCL	0.0335	99% KM Chebyshev UCL 0.0485
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.417	Anderson-Darling GOF Test
5% A-D Critical Value	0.722	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.207	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.317	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.477	k star (bias corrected MLE) 0.939
Theta hat (MLE)	0.119	Theta star (bias corrected MLE) 0.187
nu hat (MLE)	20.68	nu star (bias corrected) 13.15
MLE Mean (bias corrected)	0.176	MLE Sd (bias corrected) 0.182
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0305	nu hat (KM) 9.833
Approximate Chi Square Value (9.83, α)	3.838	Adjusted Chi Square Value (9.83, β) 3.804
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0212	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.0214
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		

For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0172
Maximum	0.412	Median	0.01
SD	0.0459	CV	2.665
k hat (MLE)	1.291	k star (bias corrected MLE)	1.271
Theta hat (MLE)	0.0133	Theta star (bias corrected MLE)	0.0135
nu hat (MLE)	415.8	nu star (bias corrected)	409.4
MLE Mean (bias corrected)	0.0172	MLE Sd (bias corrected)	0.0153
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (409.37, α)	363.5	Adjusted Chi Square Value (409.37, β)	363.1
95% Gamma Approximate UCL (use when n>=50)	0.0194	95% Gamma Adjusted UCL (use when n<50)	0.0194
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.928	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.177	Lilliefors GOF Test	
5% Lilliefors Critical Value	3.35E-01	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00796	Mean in Log Scale	-7.792
SD in Original Scale	0.0474	SD in Log Scale	1.242
95% t UCL (assumes normality of ROS data)	0.0141	95% Percentile Bootstrap UCL	0.0149
95% BCA Bootstrap UCL	0.0165	95% Bootstrap t UCL	0.0266
95% H-UCL (Log ROS)	0.00113		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.502	95% H-UCL (KM -Log)	0.00142
KM SD (logged)	1.202	95% Critical H Value (KM-Log)	2.341
KM Standard Error of Mean (logged)	0.106		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0185	Mean in Log Scale	-5.903
SD in Original Scale	0.0504	SD in Log Scale	1.844
95% t UCL (Assumes normality)	0.025	95% H-Stat UCL	0.0232
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.015	95% KM (Percentile Bootstrap) UCL	0.015
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***aroclor 1260***11096-82-5***t***ug/kg)			
General Statistics			
Total Number of Observations	161	Number of Distinct Observations	97
Number of Detects	7	Number of Non-Detects	154
Number of Distinct Detects	7	Number of Distinct Non-Detects	92
Minimum Detect	170	Minimum Non-Detect	5.4
Maximum Detect	3500	Maximum Non-Detect	2501
Variance Detects	1907433	Percent Non-Detects	95.65%
Mean Detects	1480	SD Detects	1381
Median Detects	850	CV Detects	0.933
Skewness Detects	1.019	Kurtosis Detects	-0.978
Mean of Logged Detects	6.873	SD of Logged Detects	1.06
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.791	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.295	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	72.56	Standard Error of Mean	34.63
SD	403.9	95% KM (BCA) UCL	131.9
95% KM (t) UCL	129.8	95% KM (Percentile Bootstrap) UCL	131.9
95% KM (z) UCL	129.5	95% KM Bootstrap t UCL	183.4
90% KM Chebyshev UCL	176.4	95% KM Chebyshev UCL	223.5
97.5% KM Chebyshev UCL	288.8	99% KM Chebyshev UCL	417.1
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.385	Anderson-Darling GOF Test	

5% A-D Critical Value	0.724	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.202	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.318	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.314	k star (bias corrected MLE) 0.846
Theta hat (MLE)	1126	Theta star (bias corrected MLE) 1749
nu hat (MLE)	18.4	nu star (bias corrected) 11.85
MLE Mean (bias corrected)	1480	MLE Sd (bias corrected) 1609

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0323	nu hat (KM) 10.39
Approximate Chi Square Value (10.39, α)	4.189	Adjusted Chi Square Value (10.39, β) 4.153
95% Gamma Approximate KM-UCL (use when n>=50)	180	95% Gamma Adjusted KM-UCL (use when n<50) 181.6
Gamma (KM) may not be used when k hat (KM) is < 0.1		

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 64.36
Maximum	3500	Median 0.01
SD	404	CV 6.277
k hat (MLE)	0.0984	k star (bias corrected MLE) 0.101
Theta hat (MLE)	654.1	Theta star (bias corrected MLE) 639.1
nu hat (MLE)	31.68	nu star (bias corrected) 32.43
MLE Mean (bias corrected)	64.36	MLE Sd (bias corrected) 202.8
		Adjusted Level of Significance (β) 0.0485
Approximate Chi Square Value (32.43, α)	20.41	Adjusted Chi Square Value (32.43, β) 20.32
95% Gamma Approximate UCL (use when n>=50)	102.2	95% Gamma Adjusted UCL (use when n<50) 102.7

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.168	Lilliefors GOF Test
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	68.67	Mean in Log Scale 0.893
SD in Original Scale	403.4	SD in Log Scale 1.829
95% t UCL (assumes normality of ROS data)	121.3	95% Percentile Bootstrap UCL 124.2
95% BCA Bootstrap UCL	150.4	95% Bootstrap t UCL 224.9
95% H-UCL (Log ROS)	20.07	

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	1.937	95% H-UCL (KM -Log) 15.97
KM SD (logged)	1.124	95% Critical H Value (KM-Log) 2.269
KM Standard Error of Mean (logged)	0.101	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	173	Mean in Log Scale 3.037
SD in Original Scale	442.8	SD in Log Scale 2.008
95% t UCL (Assumes normality)	230.8	95% H-Stat UCL 259.9
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Normal Distributed at 5% Significance Level		

Suggested UCL to Use		
95% KM (t) UCL	129.8	95% KM (Percentile Bootstrap) UCL 131.9

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***arsenic***7440-38-2***t***mg/kg)

General Statistics		
Total Number of Observations	366	Number of Distinct Observations 274
		Number of Missing Observations 0
Minimum	0.924	Mean 27.97
Maximum	404	Median 15.11
SD	43.21	Std. Error of Mean 2.258
Coefficient of Variation	1.545	Skewness 5.323

Normal GOF Test		
Shapiro Wilk Test Statistic	0.488	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.266	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	31.69	95% Adjusted-CLT UCL (Chen-1995)
		95% Modified-t UCL (Johnson-1978)
		32.35
		31.8
Gamma GOF Test		
A-D Test Statistic	17.2	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.78	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.177	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0488	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	1.186	k star (bias corrected MLE)
Theta hat (MLE)	2.36E+01	Theta star (bias corrected MLE)
nu hat (MLE)	868	nu star (bias corrected)
MLE Mean (bias corrected)	27.97	MLE Sd (bias corrected)
		Approximate Chi Square Value (0.05)
		795
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value
		794.8
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	30.33	95% Adjusted Gamma UCL (use when n<50)
		30.34
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.957	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	4.58E-10	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.099	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-0.079	Mean of logged Data
Maximum of Logged Data	6.001	SD of logged Data
		2.853
		0.885
Assuming Lognormal Distribution		
95% H-UCL	28.19	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	31.67	97.5% Chebyshev (MVUE) UCL
99% Chebyshev (MVUE) UCL	39.45	
		29.78
		34.3
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	31.68	95% Jackknife UCL
95% Standard Bootstrap UCL	31.56	95% Bootstrap-t UCL
95% Hall's Bootstrap UCL	32.75	95% Percentile Bootstrap UCL
95% BCA Bootstrap UCL	32.52	
90% Chebyshev(Mean, Sd) UCL	34.74	95% Chebyshev(Mean, Sd) UCL
97.5% Chebyshev(Mean, Sd) UCL	42.07	99% Chebyshev(Mean, Sd) UCL
		37.81
		50.44
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	37.81	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***arsenic***7440-38-2***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations
		Number of Missing Observations
		363
		0
Minimum	0.0783	Mean
Maximum	35.54	Median
SD	3.634	Std. Error of Mean
Coefficient of Variation	1.119	Skewness
		0.19
		4.768
Normal GOF Test		
Shapiro Wilk Test Statistic	0.593	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.241	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3.562	95% Adjusted-CLT UCL (Chen-1995)	3.612
		95% Modified-t UCL (Johnson-1978)	3.57
Gamma GOF Test			
A-D Test Statistic	5.579	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.771	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.125	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0484	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.585	k star (bias corrected MLE)	1.574
Theta hat (MLE)	2.05E+00	Theta star (bias corrected MLE)	2.064
nu hat (MLE)	1160	nu star (bias corrected)	1152
MLE Mean (bias corrected)	3.249	MLE Sd (bias corrected)	2.589
		Approximate Chi Square Value (0.05)	1074
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1074
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	3.484	95% Adjusted Gamma UCL (use when n<50)	3.485
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.97	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.34E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0889	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.547	Mean of logged Data	0.831
Maximum of Logged Data	3.571	SD of logged Data	0.839
Assuming Lognormal Distribution			
95% H-UCL	3.565	90% Chebyshev (MVUE) UCL	3.757
95% Chebyshev (MVUE) UCL	3.982	97.5% Chebyshev (MVUE) UCL	4.294
99% Chebyshev (MVUE) UCL	4.908		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3.561	95% Jackknife UCL	3.562
95% Standard Bootstrap UCL	3.558	95% Bootstrap-t UCL	3.608
95% Hall's Bootstrap UCL	3.612	95% Percentile Bootstrap UCL	3.578
95% BCA Bootstrap UCL	3.657		
90% Chebyshev(Mean, Sd) UCL	3.819	95% Chebyshev(Mean, Sd) UCL	4.077
97.5% Chebyshev(Mean, Sd) UCL	4.435	99% Chebyshev(Mean, Sd) UCL	5.139
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	4.077		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***barium***7440-39-3***t***mg/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	267
		Number of Missing Observations	0
Minimum	9.74	Mean	151
Maximum	679	Median	138.5
SD	83.67	Std. Error of Mean	4.374
Coefficient of Variation	0.554	Skewness	1.246
Normal GOF Test			
Shapiro Wilk Test Statistic	0.928	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0846	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	158.3	95% Adjusted-CLT UCL (Chen-1995)	158.5

		95% Modified-t UCL (Johnson-1978)	158.3
Gamma GOF Test			
A-D Test Statistic	1.368	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0509	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0478	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.297	k star (bias corrected MLE)	3.272
Theta hat (MLE)	4.58E+01	Theta star (bias corrected MLE)	46.17
nu hat (MLE)	2413	nu star (bias corrected)	2395
MLE Mean (bias corrected)	151	MLE Sd (bias corrected)	83.51
		Approximate Chi Square Value (0.05)	2282
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2282
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	158.5	95% Adjusted Gamma UCL (use when n<50)	158.5
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.971	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	6.23E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0624	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.276	Mean of logged Data	4.858
Maximum of Logged Data	6.521	SD of logged Data	0.594
Assuming Lognormal Distribution			
95% H-UCL	162.7	90% Chebyshev (MVUE) UCL	169.1
95% Chebyshev (MVUE) UCL	176.1	97.5% Chebyshev (MVUE) UCL	185.8
99% Chebyshev (MVUE) UCL	205		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	158.2	95% Jackknife UCL	158.3
95% Standard Bootstrap UCL	158.3	95% Bootstrap-t UCL	158.7
95% Hall's Bootstrap UCL	158.8	95% Percentile Bootstrap UCL	158.2
95% BCA Bootstrap UCL	158.5		
90% Chebyshev(Mean, Sd) UCL	164.2	95% Chebyshev(Mean, Sd) UCL	170.1
97.5% Chebyshev(Mean, Sd) UCL	178.4	99% Chebyshev(Mean, Sd) UCL	194.6
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	170.1		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***barium***7440-39-3***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	362
		Number of Missing Observations	0.00%
Minimum	1.16	Mean	18.46
Maximum	64.8	Median	18.3
SD	7.045	Std. Error of Mean	0.368
Coefficient of Variation	0.382	Skewness	1.73
Normal GOF Test			
Shapiro Wilk Test Statistic	0.906	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0922	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	19.06	95% Adjusted-CLT UCL (Chen-1995)	19.1
		95% Modified-t UCL (Johnson-1978)	19.07
Gamma GOF Test			
A-D Test Statistic	4.998	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.756	Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.0768	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0476	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	6.546	k star (bias corrected MLE)	6.495
Theta hat (MLE)	2.819	Theta star (bias corrected MLE)	2.842
nu hat (MLE)	4792	nu star (bias corrected)	4754
MLE Mean (bias corrected)	18.46	MLE Sd (bias corrected)	7.242
		Approximate Chi Square Value (0.05)	4595
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	4594
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	19.1	95% Adjusted Gamma UCL (use when n<50)	19.1
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.883	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.105	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	0.148	Mean of logged Data	2.837
Maximum of Logged Data	4.171	SD of logged Data	0.434
Assuming Lognormal Distribution			
95% H-UCL	19.52	90% Chebyshev (MVUE) UCL	20.08
95% Chebyshev (MVUE) UCL	20.69	97.5% Chebyshev (MVUE) UCL	21.53
99% Chebyshev (MVUE) UCL	23.18		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	19.06	95% Jackknife UCL	19.06
95% Standard Bootstrap UCL	19.06	95% Bootstrap-t UCL	19.1
95% Hall's Bootstrap UCL	19.08	95% Percentile Bootstrap UCL	19.06
95% BCA Bootstrap UCL	19.07		
90% Chebyshev(Mean, Sd) UCL	19.56	95% Chebyshev(Mean, Sd) UCL	20.06
97.5% Chebyshev(Mean, Sd) UCL	20.76	99% Chebyshev(Mean, Sd) UCL	22.12
Suggested UCL to Use			
95% Student's-t UCL	19.06	or 95% Modified-t UCL	19.07
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***benzaldehyde***100-52-7***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	362
Number of Detects	263	Number of Non-Detects	103
Number of Distinct Detects	259	Number of Distinct Non-Detects	103
Minimum Detect	0.00531	Minimum Non-Detect	0.0186
Maximum Detect	0.372	Maximum Non-Detect	6.045
Variance Detects	0.00393	Percent Non-Detects	28.14%
Mean Detects	0.0587	SD Detects	0.0627
Median Detects	0.0383	CV Detects	1.069
Skewness Detects	2.7	Kurtosis Detects	7.783
Mean of Logged Detects	-3.194	SD of Logged Detects	0.805
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.658	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.247	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0546	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0558	Standard Error of Mean	0.34%
SD	0.0589	95% KM (BCA) UCL	0.062
95% KM (t) UCL	0.0614	95% KM (Percentile Bootstrap) UCL	0.0614
95% KM (z) UCL	0.0614	95% KM Bootstrap t UCL	0.0623
90% KM Chebyshev UCL	0.066	95% KM Chebyshev UCL	0.0707
97.5% KM Chebyshev UCL	0.0771	99% KM Chebyshev UCL	0.0897
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	9.135	Anderson-Darling GOF Test	

5% A-D Critical Value	0.771	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.154	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0574	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.542	k star (bias corrected MLE)	1.527
Theta hat (MLE)	0.038	Theta star (bias corrected MLE)	0.0384
nu hat (MLE)	811	nu star (bias corrected)	803.1
MLE Mean (bias corrected)	0.0587	MLE Sd (bias corrected)	0.0475
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.898	nu hat (KM)	657
Approximate Chi Square Value (657.02, α)	598.6	Adjusted Chi Square Value (657.02, β)	598.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.0613	95% Gamma Adjusted KM-UCL (use when n<50)	0.0613
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00531	Mean	0.0529
Maximum	0.372	Median	0.04
SD	0.054	CV	1.02
k hat (MLE)	1.943	k star (bias corrected MLE)	1.929
Theta hat (MLE)	0.0272	Theta star (bias corrected MLE)	0.0274
nu hat (MLE)	1423	nu star (bias corrected)	1412
MLE Mean (bias corrected)	0.0529	MLE Sd (bias corrected)	0.0381
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1326	Adjusted Chi Square Value (N/A, β)	1326
95% Gamma Approximate UCL (use when n>=50)	0.0564	95% Gamma Adjusted UCL (use when n<50)	0.0564
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0904	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0546	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0528	Mean in Log Scale	-3.22
SD in Original Scale	0.054	SD in Log Scale	0.687
95% t UCL (assumes normality of ROS data)	0.0574	95% Percentile Bootstrap UCL	0.0576
95% BCA Bootstrap UCL	0.058	95% Bootstrap t UCL	0.058
95% H-UCL (Log ROS)	0.0542		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.232	Mean in Log Scale	-2.699
SD in Original Scale	0.543	SD in Log Scale	1.315
95% t UCL (Assumes normality)	0.278	95% H-Stat UCL	0.188
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.062		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***benzaldehyde***100-52-7***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	267
Number of Detects	263	Number of Non-Detects	103
Number of Distinct Detects	194	Number of Distinct Non-Detects	87
Minimum Detect	24.5	Minimum Non-Detect	100
Maximum Detect	3000	Maximum Non-Detect	71570
Variance Detects	308920	Percent Non-Detects	28.14%
Mean Detects	499.7	SD Detects	555.8
Median Detects	309	CV Detects	1.112
Skewness Detects	2.207	Kurtosis Detects	4.754
Mean of Logged Detects	5.734	SD of Logged Detects	0.994
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.711	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.249	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0546	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	464.2	Standard Error of Mean	29.96
SD	522	95% KM (BCA) UCL	518
95% KM (t) UCL	513.6	95% KM (Percentile Bootstrap) UCL	515.8
95% KM (z) UCL	513.5	95% KM Bootstrap t UCL	519
90% KM Chebyshev UCL	554.1	95% KM Chebyshev UCL	594.8
97.5% KM Chebyshev UCL	651.3	99% KM Chebyshev UCL	762.3

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.134	Anderson-Darling GOF Test	
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.129	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0578	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.181	k star (bias corrected MLE)	1.17
Theta hat (MLE)	423	Theta star (bias corrected MLE)	426.9
nu hat (MLE)	621.4	nu star (bias corrected)	615.6
MLE Mean (bias corrected)	499.7	MLE Sd (bias corrected)	461.9

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.791	nu hat (KM)	578.9
Approximate Chi Square Value (578.92, α)	524.1	Adjusted Chi Square Value (578.92, β)	523.9
95% Gamma Approximate KM-UCL (use when n \geq 50)	512.8	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	513

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	437.6
Maximum	3000	Median	314.7
SD	484.7	CV	1.108
k hat (MLE)	1.249	k star (bias corrected MLE)	1.24
Theta hat (MLE)	350.4	Theta star (bias corrected MLE)	352.8
nu hat (MLE)	914.1	nu star (bias corrected)	908
MLE Mean (bias corrected)	437.6	MLE Sd (bias corrected)	392.9
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (907.99, α)	839.1	Adjusted Chi Square Value (907.99, β)	838.8
95% Gamma Approximate UCL (use when n \geq 50)	473.6	95% Gamma Adjusted UCL (use when n $<$ 50)	473.7

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0638	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0546	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	434.2	Mean in Log Scale	5.68
SD in Original Scale	483.9	SD in Log Scale	0.864
95% t UCL (assumes normality of ROS data)	475.9	95% Percentile Bootstrap UCL	478.5
95% BCA Bootstrap UCL	479.2	95% Bootstrap t UCL	482.4
95% H-UCL (Log ROS)	466.3		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2261	Mean in Log Scale	6.229
SD in Original Scale	5771	SD in Log Scale	1.485
95% t UCL (Assumes normality)	2759	95% H-Stat UCL	1866
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	518		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***benzene***71-43-2***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	161
Number of Detects	27	Number of Non-Detects	145
Number of Distinct Detects	25	Number of Distinct Non-Detects	138
Minimum Detect	7.34E-05	Minimum Non-Detect	1.60E-04

Maximum Detect	0.46	Maximum Non-Detect	0.156
Variance Detects	0.00999	Percent Non-Detects	84.30%
Mean Detects	0.0534	SD Detects	0.0999
Median Detects	5.97E-04	CV Detects	1.871
Skewness Detects	2.953	Kurtosis Detects	10.32
Mean of Logged Detects	-5.841	SD of Logged Detects	3.2
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.602	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.297	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00864	Standard Error of Mean	0.00339
SD	0.0435	95% KM (BCA) UCL	0.0144
95% KM (t) UCL	0.0142	95% KM (Percentile Bootstrap) UCL	0.0145
95% KM (z) UCL	0.0142	95% KM Bootstrap t UCL	0.0195
90% KM Chebyshev UCL	0.0188	95% KM Chebyshev UCL	0.0234
97.5% KM Chebyshev UCL	0.0298	99% KM Chebyshev UCL	0.0423
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.652	Anderson-Darling GOF Test	
5% A-D Critical Value	0.88	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.259	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.185	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.245	k star (bias corrected MLE)	0.242
Theta hat (MLE)	0.218	Theta star (bias corrected MLE)	0.22
nu hat (MLE)	13.22	nu star (bias corrected)	13.08
MLE Mean (bias corrected)	0.0534	MLE Sd (bias corrected)	0.109
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0395	nu hat (KM)	13.58
Approximate Chi Square Value (13.58, α)	6.283	Adjusted Chi Square Value (13.58, β)	6.241
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0187	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0188
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.34E-05	Mean	0.0168
Maximum	0.46	Median	0.01
SD	0.0421	CV	2.501
k hat (MLE)	0.828	k star (bias corrected MLE)	0.817
Theta hat (MLE)	0.0203	Theta star (bias corrected MLE)	0.0206
nu hat (MLE)	284.8	nu star (bias corrected)	281.2
MLE Mean (bias corrected)	0.0168	MLE Sd (bias corrected)	0.0186
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (281.18, α)	243.3	Adjusted Chi Square Value (281.18, β)	243
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0194	95% Gamma Adjusted UCL (use when $n < 50$)	0.0195
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.832	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.208	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00855	Mean in Log Scale	-8.158
SD in Original Scale	0.0435	SD in Log Scale	1.63
95% t UCL (assumes normality of ROS data)	0.014	95% Percentile Bootstrap UCL	0.0146
95% BCA Bootstrap UCL	0.0169	95% Bootstrap t UCL	0.0189
95% H-UCL (Log ROS)	0.00153		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0123	Mean in Log Scale	-7.361
SD in Original Scale	0.0448	SD in Log Scale	2.036
95% t UCL (Assumes normality)	0.0179	95% H-Stat UCL	0.00836
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
97.5% KM (Chebyshev) UCL	0.0298	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***benzene***71-43-2***t***ug/kg)		
General Statistics		
Total Number of Observations	172	Number of Distinct Observations 69
Number of Detects	27	Number of Non-Detects 145
Number of Distinct Detects	24	Number of Distinct Non-Detects 53
Minimum Detect	0.86	Minimum Non-Detect 1.5
Maximum Detect	4200	Maximum Non-Detect 1700
Variance Detects	866788	Percent Non-Detects 84.30%
Mean Detects	522.7	SD Detects 931
Median Detects	5.2	CV Detects 178.10%
Skewness Detects	2.737	Kurtosis Detects 8.895
Mean of Logged Detects	3.483	SD of Logged Detects 3.122
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.627	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.288	Lilliefors GOF Test
5% Lilliefors Critical Value	0.171	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	84.69	Standard Error of Mean 31.88
SD	409.3	95% KM (BCA) UCL 141.4
95% KM (t) UCL	137.4	95% KM (Percentile Bootstrap) UCL 138.7
95% KM (z) UCL	137.1	95% KM Bootstrap t UCL 180.9
90% KM Chebyshev UCL	180.3	95% KM Chebyshev UCL 223.7
97.5% KM Chebyshev UCL	283.8	99% KM Chebyshev UCL 401.9
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.772	Anderson-Darling GOF Test
5% A-D Critical Value	0.875	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.278	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.184	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.255	k star (bias corrected MLE) 0.251
Theta hat (MLE)	2050	Theta star (bias corrected MLE) 2079
nu hat (MLE)	13.77	nu star (bias corrected) 13.58
MLE Mean (bias corrected)	522.7	MLE Sd (bias corrected) 1043
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0428	nu hat (KM) 14.73
Approximate Chi Square Value (14.73, α)	7.073	Adjusted Chi Square Value (14.73, β) 7.028
95% Gamma Approximate KM-UCL (use when n>=50)	176.4	95% Gamma Adjusted KM-UCL (use when n<50) 177.5
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 82.38
Maximum	4200	Median 0.01
SD	410	CV 4.978
k hat (MLE)	0.105	k star (bias corrected MLE) 0.107
Theta hat (MLE)	781.9	Theta star (bias corrected MLE) 767.1
nu hat (MLE)	36.24	nu star (bias corrected) 36.94
MLE Mean (bias corrected)	82.38	MLE Sd (bias corrected) 251.4
		Adjusted Level of Significance (β) 0.0486
Approximate Chi Square Value (36.94, α)	24.03	Adjusted Chi Square Value (36.94, β) 23.94
95% Gamma Approximate UCL (use when n>=50)	126.6	95% Gamma Adjusted UCL (use when n<50) 127.1
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.823	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.25	Lilliefors GOF Test
5% Lilliefors Critical Value	0.171	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	84.6	Mean in Log Scale 0.749

SD in Original Scale	409.6	SD in Log Scale	2.149
95% t UCL (assumes normality of ROS data)	136.3	95% Percentile Bootstrap UCL	141.6
95% BCA Bootstrap UCL	163.2	95% Bootstrap t UCL	175.5
95% H-UCL (Log ROS)	37.03		

DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	122.5	Mean in Log Scale	1.57
SD in Original Scale	424.8	SD in Log Scale	2.181
95% t UCL (Assumes normality)	176	95% H-Stat UCL	91.52
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
97.5% KM (Chebyshev) UCL	283.8

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***benzo(a)anthracene***56-55-3***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	364
Number of Detects	360	Number of Non-Detects	6
Number of Distinct Detects	358	Number of Distinct Non-Detects	6
Minimum Detect	0.0622	Minimum Non-Detect	1.024
Maximum Detect	3.86	Maximum Non-Detect	2.274
Variance Detects	0.209	Percent Non-Detects	1.64%
Mean Detects	0.534	SD Detects	0.457
Median Detects	0.387	CV Detects	0.856
Skewness Detects	3.428	Kurtosis Detects	15.52
Mean of Logged Detects	-0.839	SD of Logged Detects	60.30%

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.663	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.199	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.533	Standard Error of Mean	0.0238
SD	0.454	95% KM (BCA) UCL	0.574
95% KM (t) UCL	0.572	95% KM (Percentile Bootstrap) UCL	0.572
95% KM (z) UCL	0.572	95% KM Bootstrap t UCL	0.578
90% KM Chebyshev UCL	0.604	95% KM Chebyshev UCL	0.636
97.5% KM Chebyshev UCL	0.681	99% KM Chebyshev UCL	0.77

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	10.87	Anderson-Darling GOF Test
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.121	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0484	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.51	k star (bias corrected MLE)	2.491
Theta hat (MLE)	0.213	Theta star (bias corrected MLE)	0.214
nu hat (MLE)	1807	nu star (bias corrected)	1794
MLE Mean (bias corrected)	0.534	MLE Sd (bias corrected)	0.338

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.376	nu hat (KM)	1008
Approximate Chi Square Value (N/A, α)	934.9	Adjusted Chi Square Value (N/A, β)	934.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.574	95% Gamma Adjusted KM-UCL (use when n<50)	0.574

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0622	Mean	0.532
Maximum	3.86	Median	0.39
SD	0.454	CV	0.852
k hat (MLE)	2.544	k star (bias corrected MLE)	2.525
Theta hat (MLE)	0.209	Theta star (bias corrected MLE)	0.211
nu hat (MLE)	1863	nu star (bias corrected)	1849

MLE Mean (bias corrected)	0.532	MLE Sd (bias corrected)	0.335
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1750	Adjusted Chi Square Value (N/A, β)	1749
95% Gamma Approximate UCL (use when $n \geq 50$)	0.562	95% Gamma Adjusted UCL (use when $n < 50$)	0.562
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0801	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.532	Mean in Log Scale	-0.84
SD in Original Scale	0.454	SD in Log Scale	0.598
95% t UCL (assumes normality of ROS data)	0.571	95% Percentile Bootstrap UCL	0.571
95% BCA Bootstrap UCL	0.575	95% Bootstrap t UCL	0.579
95% H-UCL (Log ROS)	0.547		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.537	Mean in Log Scale	-0.832
SD in Original Scale	0.455	SD in Log Scale	0.602
95% t UCL (Assumes normality)	0.576	95% H-Stat UCL	0.553
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.574		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***benzo(a)anthracene***56-55-3***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	284
Number of Detects	360	Number of Non-Detects	6
Number of Distinct Detects	278	Number of Distinct Non-Detects	6
Minimum Detect	123	Minimum Non-Detect	9325
Maximum Detect	62200	Maximum Non-Detect	26350
Variance Detects	36284595	Percent Non-Detects	1.64%
Mean Detects	4911	SD Detects	6024
Median Detects	3125	CV Detects	1.226
Skewness Detects	4.486	Kurtosis Detects	29.6
Mean of Logged Detects	8.086	SD of Logged Detects	0.882
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.611	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.225	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4892	Standard Error of Mean	313.6
SD	5979	95% KM (BCA) UCL	5424
95% KM (t) UCL	5409	95% KM (Percentile Bootstrap) UCL	5416
95% KM (z) UCL	5408	95% KM Bootstrap t UCL	5514
90% KM Chebyshev UCL	5833	95% KM Chebyshev UCL	6259
97.5% KM Chebyshev UCL	6850	99% KM Chebyshev UCL	8012
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.284	Anderson-Darling GOF Test	
5% A-D Critical Value	0.776	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0955	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.049	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.352	k star (bias corrected MLE)	1.343
Theta hat (MLE)	3632	Theta star (bias corrected MLE)	3658
nu hat (MLE)	973.5	nu star (bias corrected)	966.8
MLE Mean (bias corrected)	4911	MLE Sd (bias corrected)	4238
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.669	nu hat (KM)	490
Approximate Chi Square Value (490.02, α)	439.7	Adjusted Chi Square Value (490.02, β)	439.5
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	5452	95% Gamma Adjusted KM-UCL (use when $n < 50$)	5454

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	123	Mean 4880
Maximum	62200	Median 3120
SD	5979	CV 1.225
k hat (MLE)	1.367	k star (bias corrected MLE) 1.358
Theta hat (MLE)	3569	Theta star (bias corrected MLE) 3593
nu hat (MLE)	1001	nu star (bias corrected) 994.1
MLE Mean (bias corrected)	4880	MLE Sd (bias corrected) 4188
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (994.12, α)	921.9	Adjusted Chi Square Value (994.12, β) 921.7
95% Gamma Approximate UCL (use when n>=50)	5262	95% Gamma Adjusted UCL (use when n<50) 5264
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.037	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0467	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	4880	Mean in Log Scale 8.085
SD in Original Scale	5979	SD in Log Scale 0.874
95% t UCL (assumes normality of ROS data)	5395	95% Percentile Bootstrap UCL 5394
95% BCA Bootstrap UCL	5473	95% Bootstrap t UCL 5484
95% H-UCL (Log ROS)	5218	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	8.084	95% H-UCL (KM -Log) 5236
KM SD (logged)	0.879	95% Critical H Value (KM-Log) 2.032
KM Standard Error of Mean (logged)	0.0463	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	4954	Mean in Log Scale 8.098
SD in Original Scale	6002	SD in Log Scale 0.881
95% t UCL (Assumes normality)	5471	95% H-Stat UCL 5324
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	5424	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***benzo(a)pyrene***50-32-8***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 365
Number of Detects	359	Number of Non-Detects 7
Number of Distinct Detects	358	Number of Distinct Non-Detects 7
Minimum Detect	0.0686	Minimum Non-Detect 0.857
Maximum Detect	2.76	Maximum Non-Detect 1.656
Variance Detects	0.123	Percent Non-Detects 1.91%
Mean Detects	0.529	SD Detects 0.351
Median Detects	0.431	CV Detects 0.664
Skewness Detects	2.771	Kurtosis Detects 10.94
Mean of Logged Detects	-0.792	SD of Logged Detects 0.535
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.757	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.16	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.527	Standard Error of Mean 0.0183
SD	0.348	95% KM (BCA) UCL 0.556
95% KM (t) UCL	0.558	95% KM (Percentile Bootstrap) UCL 0.558
95% KM (z) UCL	0.558	95% KM Bootstrap t UCL 0.561
90% KM Chebyshev UCL	0.582	95% KM Chebyshev UCL 0.607
97.5% KM Chebyshev UCL	0.642	99% KM Chebyshev UCL 0.71

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	5.043	Anderson-Darling GOF Test
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0915	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0483	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.39	k star (bias corrected MLE) 3.363
Theta hat (MLE)	0.156	Theta star (bias corrected MLE) 0.157
nu hat (MLE)	2434	nu star (bias corrected) 2415
MLE Mean (bias corrected)	0.529	MLE Sd (bias corrected) 0.288
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.292	nu hat (KM) 1677
Approximate Chi Square Value (N/A, α)	1583	Adjusted Chi Square Value (N/A, β) 1583
95% Gamma Approximate KM-UCL (use when n>=50)	0.559	95% Gamma Adjusted KM-UCL (use when n<50) 0.559
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0686	Mean 0.527
Maximum	2.76	Median 0.433
SD	0.348	CV 0.66
k hat (MLE)	3.447	k star (bias corrected MLE) 3.42
Theta hat (MLE)	0.153	Theta star (bias corrected MLE) 0.154
nu hat (MLE)	2523	nu star (bias corrected) 2504
MLE Mean (bias corrected)	0.527	MLE Sd (bias corrected) 0.285
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2388	Adjusted Chi Square Value (N/A, β) 2388
95% Gamma Approximate UCL (use when n>=50)	0.553	95% Gamma Adjusted UCL (use when n<50) 0.553
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0589	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468	Detected Data Not Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.527	Mean in Log Scale -0.793
SD in Original Scale	0.348	SD in Log Scale 0.53
95% t UCL (assumes normality of ROS data)	0.557	95% Percentile Bootstrap UCL 0.558
95% BCA Bootstrap UCL	0.559	95% Bootstrap t UCL 0.561
95% H-UCL (Log ROS)	0.548	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-0.793	95% H-UCL (KM -Log) 0.548
KM SD (logged)	0.533	95% Critical H Value (KM-Log) 1.811
KM Standard Error of Mean (logged)	0.0281	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.53	Mean in Log Scale -0.787
SD in Original Scale	0.348	SD in Log Scale 0.533
95% t UCL (Assumes normality)	0.56	95% H-Stat UCL 0.552
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.556	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***benzo(a)pyrene***50-32-8***t***ug/kg)

General Statistics		
Total Number of Observations	366	Number of Distinct Observations 288
Number of Detects	359	Number of Non-Detects 7
Number of Distinct Detects	281	Number of Distinct Non-Detects 7
Minimum Detect	199	Minimum Non-Detect 7834
Maximum Detect	55200	Maximum Non-Detect 20590
Variance Detects	23145149	Percent Non-Detects 1.91%
Mean Detects	4715	SD Detects 4811
Median Detects	3560	CV Detects 1.02
Skewness Detects	4.698	Kurtosis Detects 37.53

Mean of Logged Detects	8.132	SD of Logged Detects	0.809
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.671	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.189	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4698	Standard Error of Mean	250.5
SD	4773	95% KM (BCA) UCL	5123
95% KM (t) UCL	5111	95% KM (Percentile Bootstrap) UCL	5135
95% KM (z) UCL	5110	95% KM Bootstrap t UCL	5201
90% KM Chebyshev UCL	5449	95% KM Chebyshev UCL	5790
97.5% KM Chebyshev UCL	6262	99% KM Chebyshev UCL	7191
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.892	Anderson-Darling GOF Test	
5% A-D Critical Value	0.77	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0629	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0488	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.677	k star (bias corrected MLE)	1.665
Theta hat (MLE)	2812	Theta star (bias corrected MLE)	2832
nu hat (MLE)	1204	nu star (bias corrected)	1195
MLE Mean (bias corrected)	4715	MLE Sd (bias corrected)	3654
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.969	nu hat (KM)	709.1
Approximate Chi Square Value (709.13, α)	648.3	Adjusted Chi Square Value (709.13, β)	648.1
95% Gamma Approximate KM-UCL (use when n>=50)	5138	95% Gamma Adjusted KM-UCL (use when n<50)	5140
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	199	Mean	4687
Maximum	55200	Median	3525
SD	4769	CV	1.017
k hat (MLE)	1.701	k star (bias corrected MLE)	1.689
Theta hat (MLE)	2755	Theta star (bias corrected MLE)	2775
nu hat (MLE)	1245	nu star (bias corrected)	1237
MLE Mean (bias corrected)	4687	MLE Sd (bias corrected)	3606
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1156	Adjusted Chi Square Value (N/A, β)	1156
95% Gamma Approximate UCL (use when n>=50)	5014	95% Gamma Adjusted UCL (use when n<50)	5016
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0361	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4685	Mean in Log Scale	8.13
SD in Original Scale	4770	SD in Log Scale	0.801
95% t UCL (assumes normality of ROS data)	5096	95% Percentile Bootstrap UCL	5075
95% BCA Bootstrap UCL	5134	95% Bootstrap t UCL	5173
95% H-UCL (Log ROS)	5083		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	8.129	95% H-UCL (KM -Log)	5104
KM SD (logged)	0.806	95% Critical H Value (KM-Log)	1.979
KM Standard Error of Mean (logged)	0.0425		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4752	Mean in Log Scale	8.143
SD in Original Scale	4789	SD in Log Scale	0.807
95% t UCL (Assumes normality)	5165	95% H-Stat UCL	5176
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	5123		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***benzo(b)fluoranthene***205-99-2***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	331	Number of Distinct Observations 331
Number of Detects	324	Number of Non-Detects 7
Number of Distinct Detects	324	Number of Distinct Non-Detects 7
Minimum Detect	0.0847	Minimum Non-Detect 1.023
Maximum Detect	2.531	Maximum Non-Detect 1.919
Variance Detects	0.0942	Percent Non-Detects 2.12%
Mean Detects	0.52	SD Detects 0.307
Median Detects	0.447	CV Detects 0.59
Skewness Detects	2.792	Kurtosis Detects 12.43
Mean of Logged Detects	-0.781	SD of Logged Detects 0.488
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.782	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.134	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0492	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.519	Standard Error of Mean 0.0169
SD	0.305	95% KM (BCA) UCL 0.547
95% KM (t) UCL	0.547	95% KM (Percentile Bootstrap) UCL 0.546
95% KM (z) UCL	0.547	95% KM Bootstrap t UCL 0.549
90% KM Chebyshev UCL	0.57	95% KM Chebyshev UCL 0.592
97.5% KM Chebyshev UCL	0.624	99% KM Chebyshev UCL 0.687
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.072	Anderson-Darling GOF Test
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0596	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0507	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	4.093	k star (bias corrected MLE) 4.057
Theta hat (MLE)	0.127	Theta star (bias corrected MLE) 0.128
nu hat (MLE)	2652	nu star (bias corrected) 2629
MLE Mean (bias corrected)	0.52	MLE Sd (bias corrected) 0.258
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	2.899	nu hat (KM) 1919
Approximate Chi Square Value (N/A, α)	1818	Adjusted Chi Square Value (N/A, β) 1818
95% Gamma Approximate KM-UCL (use when n>=50)	0.548	95% Gamma Adjusted KM-UCL (use when n<50) 0.548
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0847	Mean 0.519
Maximum	2.531	Median 0.453
SD	0.304	CV 0.586
k hat (MLE)	4.173	k star (bias corrected MLE) 4.137
Theta hat (MLE)	0.124	Theta star (bias corrected MLE) 0.125
nu hat (MLE)	2763	nu star (bias corrected) 2739
MLE Mean (bias corrected)	0.519	MLE Sd (bias corrected) 0.255
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	2618	Adjusted Chi Square Value (N/A, β) 2618
95% Gamma Approximate UCL (use when n>=50)	0.542	95% Gamma Adjusted UCL (use when n<50) 0.543
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0393	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0492	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.518	Mean in Log Scale -0.782
SD in Original Scale	0.304	SD in Log Scale 0.483
95% t UCL (assumes normality of ROS data)	0.546	95% Percentile Bootstrap UCL 0.546
95% BCA Bootstrap UCL	0.549	95% Bootstrap t UCL 0.548
95% H-UCL (Log ROS)	0.539	

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-0.782	95% H-UCL (KM -Log)	0.54
KM SD (logged)	0.487	95% Critical H Value (KM-Log)	1.786
KM Standard Error of Mean (logged)	0.027		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.522	Mean in Log Scale	-0.775
SD in Original Scale	0.305	SD in Log Scale	0.486
95% t UCL (Assumes normality)	0.55	95% H-Stat UCL	0.544
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.547		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***benzo(b)fluoranthene***205-99-2***t***ug/kg)			
General Statistics			
Total Number of Observations	331	Number of Distinct Observations	288
Number of Detects	324	Number of Non-Detects	7
Number of Distinct Detects	281	Number of Distinct Non-Detects	7
Minimum Detect	121	Minimum Non-Detect	9253
Maximum Detect	30115	Maximum Non-Detect	23778
Variance Detects	15989466	Percent Non-Detects	2.12%
Mean Detects	4693	SD Detects	3999
Median Detects	3800	CV Detects	0.852
Skewness Detects	2.708	Kurtosis Detects	11.73
Mean of Logged Detects	8.146	SD of Logged Detects	0.822
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.781	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.141	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0492	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4681	Standard Error of Mean	219.7
SD	3971	95% KM (BCA) UCL	5049
95% KM (t) UCL	5043	95% KM (Percentile Bootstrap) UCL	5055
95% KM (z) UCL	5042	95% KM Bootstrap t UCL	5069
90% KM Chebyshev UCL	5340	95% KM Chebyshev UCL	5638
97.5% KM Chebyshev UCL	6.05E+03	99% KM Chebyshev UCL	6866
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.112	Anderson-Darling GOF Test	
5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0406	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0512	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.774	k star (bias corrected MLE)	1.76
Theta hat (MLE)	2646	Theta star (bias corrected MLE)	2667
nu hat (MLE)	1150	nu star (bias corrected)	1140
MLE Mean (bias corrected)	4693	MLE Sd (bias corrected)	3538
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.39	nu hat (KM)	919.9
Approximate Chi Square Value (919.94, α)	850.5	Adjusted Chi Square Value (919.94, β)	850.3
95% Gamma Approximate KM-UCL (use when n>=50)	5063	95% Gamma Adjusted KM-UCL (use when n<50)	5064
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	121	Mean	4669
Maximum	30115	Median	3750
SD	3960	CV	0.848
k hat (MLE)	1.805	k star (bias corrected MLE)	1.791
Theta hat (MLE)	2586	Theta star (bias corrected MLE)	2607
nu hat (MLE)	1195	nu star (bias corrected)	1186
MLE Mean (bias corrected)	4669	MLE Sd (bias corrected)	3489

	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1107 Adjusted Chi Square Value (N/A, β)	1106
95% Gamma Approximate UCL (use when $n \geq 50$)	5002 95% Gamma Adjusted UCL (use when $n < 50$)	5004
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0638 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0492 Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	4663 Mean in Log Scale	8.145
SD in Original Scale	3961 SD in Log Scale	0.813
95% t UCL (assumes normality of ROS data)	5022 95% Percentile Bootstrap UCL	5030
95% BCA Bootstrap UCL	5057 95% Bootstrap t UCL	5071
95% H-UCL (Log ROS)	5241	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	8.145 95% H-UCL (KM -Log)	5270
KM SD (logged)	0.819 95% Critical H Value (KM-Log)	1.985
KM Standard Error of Mean (logged)	0.0455	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	4743 Mean in Log Scale	8.16
SD in Original Scale	3991 SD in Log Scale	0.82
95% t UCL (Assumes normality)	5104 95% H-Stat UCL	5353
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	5638 95% GROS Approximate Gamma UCL	5002
95% Approximate Gamma KM-UCL	5063	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***benzo(e)pyrene***192-97-2***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	335 Number of Distinct Observations	333
	Number of Missing Observations	0
Minimum	0.0617 Mean	0.392
Maximum	1.691 Median	0.336
SD	0.228 Std. Error of Mean	0.0125
Coefficient of Variation	0.582 Skewness	2.512
Normal GOF Test		
Shapiro Wilk Test Statistic	0.779 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.14 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0484 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.413 95% Adjusted-CLT UCL (Chen-1995)	0.414
	95% Modified-t UCL (Johnson-1978)	0.413
Gamma GOF Test		
A-D Test Statistic	4.428 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.758 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0783 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0499 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	4.207 k star (bias corrected MLE)	4.171
Theta hat (MLE)	0.0932 Theta star (bias corrected MLE)	0.094
nu hat (MLE)	2819 nu star (bias corrected)	2795
MLE Mean (bias corrected)	0.392 MLE Sd (bias corrected)	0.192
	Approximate Chi Square Value (0.05)	2673
Adjusted Level of Significance	0.0493 Adjusted Chi Square Value	2672
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when $n \geq 50$))	0.41 95% Adjusted Gamma UCL (use when $n < 50$)	0.41

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.978	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0.0662	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0418	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0484	Data appear Lognormal at 5% Significance Level
Data appear Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-2.785	Mean of logged Data
Maximum of Logged Data	0.525	SD of logged Data
Assuming Lognormal Distribution		
95% H-UCL	0.407	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	0.435	97.5% Chebyshev (MVUE) UCL
99% Chebyshev (MVUE) UCL	0.495	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	0.413	95% Jackknife UCL
95% Standard Bootstrap UCL	0.412	95% Bootstrap-t UCL
95% Hall's Bootstrap UCL	0.415	95% Percentile Bootstrap UCL
95% BCA Bootstrap UCL	0.414	
90% Chebyshev(Mean, Sd) UCL	0.429	95% Chebyshev(Mean, Sd) UCL
97.5% Chebyshev(Mean, Sd) UCL	0.47	99% Chebyshev(Mean, Sd) UCL
Suggested UCL to Use		
95% Student's-t UCL	0.413	or 95% Modified-t UCL
or 95% H-UCL	0.407	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
ProUCL computes and outputs H-statistic based UCLs for historical reasons only.		
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.		
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.		
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.		
RESULT_VALUE (studyarea***benzo(e)pyrene***192-97-2******ug/kg)		
General Statistics		
Total Number of Observations	335	Number of Distinct Observations
		Number of Missing Observations
Minimum	124	Mean
Maximum	30100	Median
SD	2961	Std. Error of Mean
Coefficient of Variation	0.87	Skewness
Normal GOF Test		
Shapiro Wilk Test Statistic	0.76	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.155	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0484	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	3670	95% Adjusted-CLT UCL (Chen-1995)
		95% Modified-t UCL (Johnson-1978)
Gamma GOF Test		
A-D Test Statistic	1.599	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.768	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0519	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0504	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	1.858	k star (bias corrected MLE)
Theta hat (MLE)	1832	Theta star (bias corrected MLE)
nu hat (MLE)	1245	nu star (bias corrected)
MLE Mean (bias corrected)	3404	MLE Sd (bias corrected)
		Approximate Chi Square Value (0.05)
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	3641	95% Adjusted Gamma UCL (use when n<50)

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.982	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0.304	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0745	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0484	Data Not Lognormal at 5% Significance Level
Data appear Approximate Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	4.82	Mean of logged Data
Maximum of Logged Data	10.31	SD of logged Data
Assuming Lognormal Distribution		
95% H-UCL	3771	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	4202	97.5% Chebyshev (MVUE) UCL
99% Chebyshev (MVUE) UCL	5152	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	3670	95% Jackknife UCL
95% Standard Bootstrap UCL	3674	95% Bootstrap-t UCL
95% Hall's Bootstrap UCL	3737	95% Percentile Bootstrap UCL
95% BCA Bootstrap UCL	3706	
90% Chebyshev(Mean, Sd) UCL	3889	95% Chebyshev(Mean, Sd) UCL
97.5% Chebyshev(Mean, Sd) UCL	4414	99% Chebyshev(Mean, Sd) UCL
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	4109	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***benzo(g,h,i)perylene***191-24-2***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations
Number of Detects	359	Number of Non-Detects
Number of Distinct Detects	359	Number of Distinct Non-Detects
Minimum Detect	0.0598	Minimum Non-Detect
Maximum Detect	1.465	Maximum Non-Detect
Variance Detects	0.037	Percent Non-Detects
Mean Detects	0.347	SD Detects
Median Detects	0.3	CV Detects
Skewness Detects	2.148	Kurtosis Detects
Mean of Logged Detects	-1.18	SD of Logged Detects
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.833	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.118	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.347	Standard Error of Mean
SD	0.191	95% KM (BCA) UCL
95% KM (t) UCL	0.364	95% KM (Percentile Bootstrap) UCL
95% KM (z) UCL	0.364	95% KM Bootstrap t UCL
90% KM Chebyshev UCL	0.378	95% KM Chebyshev UCL
97.5% KM Chebyshev UCL	0.41	99% KM Chebyshev UCL
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.974	Anderson-Darling GOF Test
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0678	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0482	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	4.231	k star (bias corrected MLE)
Theta hat (MLE)	0.0821	Theta star (bias corrected MLE)
nu hat (MLE)	3038	nu star (bias corrected)
MLE Mean (bias corrected)	0.347	MLE Sd (bias corrected)
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	3.289	nu hat (KM)
Approximate Chi Square Value (N/A, α)	2295	Adjusted Chi Square Value (N/A, β)

95% Gamma Approximate KM-UCL (use when n>=50)	0.364	95% Gamma Adjusted KM-UCL (use when n<50)	0.364
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0598	Mean	0.347
Maximum	1.465	Median	0.304
SD	0.191	CV	0.549
k hat (MLE)	4.308	k star (bias corrected MLE)	4.274
Theta hat (MLE)	0.0805	Theta star (bias corrected MLE)	0.0812
nu hat (MLE)	3153	nu star (bias corrected)	3129
MLE Mean (bias corrected)	0.347	MLE Sd (bias corrected)	0.168
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3000	Adjusted Chi Square Value (N/A, β)	2999
95% Gamma Approximate UCL (use when n>=50)	0.362	95% Gamma Adjusted UCL (use when n<50)	0.362
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0544	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.347	Mean in Log Scale	-1.18
SD in Original Scale	0.191	SD in Log Scale	0.482
95% t UCL (assumes normality of ROS data)	0.363	95% Percentile Bootstrap UCL	0.364
95% BCA Bootstrap UCL	0.364	95% Bootstrap t UCL	0.364
95% H-UCL (Log ROS)	0.361		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.18	95% H-UCL (KM -Log)	0.362
KM SD (logged)	0.485	95% Critical H Value (KM-Log)	1.787
KM Standard Error of Mean (logged)	0.0256		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.351	Mean in Log Scale	-1.17
SD in Original Scale	0.192	SD in Log Scale	0.487
95% t UCL (Assumes normality)	0.367	95% H-Stat UCL	0.366
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.365		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***benzo(g,h,i)perylene***191-24-2***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	291
Number of Detects	359	Number of Non-Detects	7
Number of Distinct Detects	284	Number of Distinct Non-Detects	7
Minimum Detect	100	Minimum Non-Detect	7633
Maximum Detect	26000	Maximum Non-Detect	15350
Variance Detects	6921077	Percent Non-Detects	1.91%
Mean Detects	3125	SD Detects	2631
Median Detects	2670	CV Detects	0.842
Skewness Detects	3.143	Kurtosis Detects	19.04
Mean of Logged Detects	7.744	SD of Logged Detects	82.10%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.786	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.141	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3121	Standard Error of Mean	137.7
SD	2616	95% KM (BCA) UCL	3374
95% KM (t) UCL	3348	95% KM (Percentile Bootstrap) UCL	3348
95% KM (z) UCL	3347	95% KM Bootstrap t UCL	3379
90% KM Chebyshev UCL	3534	95% KM Chebyshev UCL	3721
97.5% KM Chebyshev UCL	3981	99% KM Chebyshev UCL	4491

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.002	Anderson-Darling GOF Test
5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0639	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0487	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.795	k star (bias corrected MLE) 1.782
Theta hat (MLE)	1741	Theta star (bias corrected MLE) 1754
nu hat (MLE)	1289	nu star (bias corrected) 1280
MLE Mean (bias corrected)	3125	MLE Sd (bias corrected) 2341
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.423	nu hat (KM) 1042
Approximate Chi Square Value (N/A, α)	967.9	Adjusted Chi Square Value (N/A, β) 967.6
95% Gamma Approximate KM-UCL (use when n>=50)	3359	95% Gamma Adjusted KM-UCL (use when n<50) 3360
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	100	Mean 3113
Maximum	26000	Median 2620
SD	2607	CV 0.838
k hat (MLE)	1.825	k star (bias corrected MLE) 1.812
Theta hat (MLE)	1706	Theta star (bias corrected MLE) 1718
nu hat (MLE)	1336	nu star (bias corrected) 1326
MLE Mean (bias corrected)	3113	MLE Sd (bias corrected) 2312
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1243	Adjusted Chi Square Value (N/A, β) 1242
95% Gamma Approximate UCL (use when n>=50)	3322	95% Gamma Adjusted UCL (use when n<50) 3323
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0843	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3109	Mean in Log Scale 7.743
SD in Original Scale	2608	SD in Log Scale 0.813
95% t UCL (assumes normality of ROS data)	3334	95% Percentile Bootstrap UCL 3341
95% BCA Bootstrap UCL	3363	95% Bootstrap t UCL 3360
95% H-UCL (Log ROS)	3492	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	3170	Mean in Log Scale 7.759
SD in Original Scale	2635	SD in Log Scale 0.822
95% t UCL (Assumes normality)	3397	95% H-Stat UCL 3578
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	3374	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***benzo(j,k)fluoranthene***bkjflanth***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	331	Number of Distinct Observations 330
Number of Detects	303	Number of Non-Detects 28
Number of Distinct Detects	302	Number of Distinct Non-Detects 28
Minimum Detect	0.0663	Minimum Non-Detect 0.496
Maximum Detect	2.002	Maximum Non-Detect 1.824
Variance Detects	0.0529	Percent Non-Detects 8.46%
Mean Detects	0.407	SD Detects 0.23
Median Detects	0.35	CV Detects 0.564
Skewness Detects	2.858	Kurtosis Detects 13.59
Mean of Logged Detects	-1.014	SD of Logged Detects 0.469
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.788	Normal GOF Test on Detected Observations Only

5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.142	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0509	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.404	Standard Error of Mean	0.0126
SD	0.224	95% KM (BCA) UCL	0.426
95% KM (t) UCL	0.424	95% KM (Percentile Bootstrap) UCL	0.425
95% KM (z) UCL	0.424	95% KM Bootstrap t UCL	0.427
90% KM Chebyshev UCL	0.441	95% KM Chebyshev UCL	0.458
97.5% KM Chebyshev UCL	0.482	99% KM Chebyshev UCL	0.529
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.342	Anderson-Darling GOF Test	
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.073	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0521	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	4.455	k star (bias corrected MLE)	4.413
Theta hat (MLE)	0.0915	Theta star (bias corrected MLE)	0.0923
nu hat (MLE)	2700	nu star (bias corrected)	2675
MLE Mean (bias corrected)	0.407	MLE Sd (bias corrected)	0.194
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.252	nu hat (KM)	2153
Approximate Chi Square Value (N/A, α)	2046	Adjusted Chi Square Value (N/A, β)	2045
95% Gamma Approximate KM-UCL (use when n>=50)	0.425	95% Gamma Adjusted KM-UCL (use when n<50)	0.425
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0663	Mean	0.403
Maximum	2.002	Median	0.354
SD	0.221	CV	0.547
k hat (MLE)	4.818	k star (bias corrected MLE)	4.776
Theta hat (MLE)	0.0836	Theta star (bias corrected MLE)	8.44%
nu hat (MLE)	3189	nu star (bias corrected)	3162
MLE Mean (bias corrected)	0.403	MLE Sd (bias corrected)	0.184
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3032	Adjusted Chi Square Value (N/A, β)	3032
95% Gamma Approximate UCL (use when n>=50)	0.42	95% Gamma Adjusted UCL (use when n<50)	0.42
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0419	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0509	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.402	Mean in Log Scale	-1.018
SD in Original Scale	0.221	SD in Log Scale	0.449
95% t UCL (assumes normality of ROS data)	0.422	95% Percentile Bootstrap UCL	0.423
95% BCA Bootstrap UCL	0.424	95% Bootstrap t UCL	0.424
95% H-UCL (Log ROS)	0.417		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.02	95% H-UCL (KM -Log)	0.42
KM SD (logged)	0.463	95% Critical H Value (KM-Log)	1.775
KM Standard Error of Mean (logged)	0.0263		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.408	Mean in Log Scale	-1.006
SD in Original Scale	0.223	SD in Log Scale	0.456
95% t UCL (Assumes normality)	0.428	95% H-Stat UCL	0.424
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.426		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***benzo(j,k)fluoranthene***bkjflanth***t***ug/kg)

General Statistics

Total Number of Observations	331	Number of Distinct Observations	287
Number of Detects	303	Number of Non-Detects	28
Number of Distinct Detects	260	Number of Distinct Non-Detects	27
Minimum Detect	139	Minimum Non-Detect	5198
Maximum Detect	30700	Maximum Non-Detect	22778
Variance Detects	9820202	Percent Non-Detects	8.46%
Mean Detects	3580	SD Detects	3134
Median Detects	2940	CV Detects	0.875
Skewness Detects	3.521	Kurtosis Detects	21.94
Mean of Logged Detects	7.891	SD of Logged Detects	0.788

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.754	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.15	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0509	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	3530	Standard Error of Mean	170.5
SD	3046	95% KM (BCA) UCL	3838
95% KM (t) UCL	3812	95% KM (Percentile Bootstrap) UCL	3822
95% KM (z) UCL	3811	95% KM Bootstrap t UCL	3852
90% KM Chebyshev UCL	4042	95% KM Chebyshev UCL	4274
97.5% KM Chebyshev UCL	4595	99% KM Chebyshev UCL	5227

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.232	Anderson-Darling GOF Test	
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0488	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0526	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	1.86	k star (bias corrected MLE)	1.843
Theta hat (MLE)	1925	Theta star (bias corrected MLE)	1942
nu hat (MLE)	1127	nu star (bias corrected)	1117
MLE Mean (bias corrected)	3580	MLE Sd (bias corrected)	2637

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.343	nu hat (KM)	889.2
Approximate Chi Square Value (889.17, α)	821	Adjusted Chi Square Value (889.17, β)	820.7
95% Gamma Approximate KM-UCL (use when n>=50)	3824	95% Gamma Adjusted KM-UCL (use when n<50)	3825

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	139	Mean	3500
Maximum	30700	Median	2810
SD	3011	CV	0.86
k hat (MLE)	1.992	k star (bias corrected MLE)	1.976
Theta hat (MLE)	1757	Theta star (bias corrected MLE)	1771
nu hat (MLE)	1319	nu star (bias corrected)	1308
MLE Mean (bias corrected)	3500	MLE Sd (bias corrected)	2490
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1225	Adjusted Chi Square Value (N/A, β)	1225
95% Gamma Approximate UCL (use when n>=50)	3737	95% Gamma Adjusted UCL (use when n<50)	3738

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0682	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0509	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	3487	Mean in Log Scale	7.884
SD in Original Scale	3014	SD in Log Scale	0.755
95% t UCL (assumes normality of ROS data)	3760	95% Percentile Bootstrap UCL	3766
95% BCA Bootstrap UCL	3823	95% Bootstrap t UCL	3807
95% H-UCL (Log ROS)	3826		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	7.882	95% H-UCL (KM -Log)	3909
KM SD (logged)	0.781	95% Critical H Value (KM-Log)	1.958
KM Standard Error of Mean (logged)	0.0446		

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	3647 Mean in Log Scale	7.927
SD in Original Scale	3051 SD in Log Scale	0.769
95% t UCL (Assumes normality)	3924 95% H-Stat UCL	4046
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
 Detected Data appear Approximate Gamma Distributed at 5% Significance Level

Suggested UCL to Use		
95% KM (Chebyshev) UCL	4274 95% GROS Approximate Gamma UCL	3737
95% Approximate Gamma KM-UCL	3824	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***benzonaphthothiophene***61523-34-0***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	130 Number of Distinct Observations	130
	Number of Missing Observations	0
Minimum	0.0561 Mean	0.2
Maximum	1.191 Median	0.149
SD	0.182 Std. Error of Mean	0.0159
Coefficient of Variation	0.906 Skewness	3.282

Normal GOF Test		
Shapiro Wilk Test Statistic	0.622 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.237 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.227 95% Adjusted-CLT UCL (Chen-1995)	0.232
	95% Modified-t UCL (Johnson-1978)	0.228

Gamma GOF Test		
A-D Test Statistic	5.862 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.763 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.166 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0826 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics		
k hat (MLE)	2.43 k star (bias corrected MLE)	2.379
Theta hat (MLE)	0.0825 Theta star (bias corrected MLE)	0.0842
nu hat (MLE)	631.9 nu star (bias corrected)	618.7
MLE Mean (bias corrected)	0.2 MLE Sd (bias corrected)	0.13
	Approximate Chi Square Value (0.05)	562
Adjusted Level of Significance	0.0482 Adjusted Chi Square Value	561.4

Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	0.221 95% Adjusted Gamma UCL (use when n<50)	0.221

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.918 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.86E-09 Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.113 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0777 Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level		

Lognormal Statistics		
Minimum of Logged Data	-2.881 Mean of logged Data	-1.827
Maximum of Logged Data	0.175 SD of logged Data	0.595

Assuming Lognormal Distribution		
95% H-UCL	0.212 90% Chebyshev (MVUE) UCL	0.224
95% Chebyshev (MVUE) UCL	0.239 97.5% Chebyshev (MVUE) UCL	0.259
99% Chebyshev (MVUE) UCL	0.299	

Nonparametric Distribution Free UCL Statistics
 Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs		
95% CLT UCL	0.227 95% Jackknife UCL	0.227

95% Standard Bootstrap UCL	0.226	95% Bootstrap-t UCL	0.233
95% Hall's Bootstrap UCL	0.234	95% Percentile Bootstrap UCL	0.229
95% BCA Bootstrap UCL	0.234		
90% Chebyshev(Mean, Sd) UCL	0.248	95% Chebyshev(Mean, Sd) UCL	0.27
97.5% Chebyshev(Mean, Sd) UCL	0.3	99% Chebyshev(Mean, Sd) UCL	0.359
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.27		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***benzonaphthothiophene***61523-34-0***t***ug/kg)

General Statistics			
Total Number of Observations	130	Number of Distinct Observations	124
		Number of Missing Observations	0
Minimum	265	Mean	1870
Maximum	19700	Median	1030
SD	2649	Std. Error of Mean	232.3
Coefficient of Variation	1.416	Skewness	3.912
Normal GOF Test			
Shapiro Wilk Test Statistic	0.566	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.272	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2255	95% Adjusted-CLT UCL (Chen-1995)	2338
		95% Modified-t UCL (Johnson-1978)	2269
Gamma GOF Test			
A-D Test Statistic	4.924	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.779	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.12	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0839	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.157	k star (bias corrected MLE)	1.136
Theta hat (MLE)	1616	Theta star (bias corrected MLE)	1647
nu hat (MLE)	300.9	nu star (bias corrected)	#####
MLE Mean (bias corrected)	1870	MLE Sd (bias corrected)	#####
		Approximate Chi Square Value (0.05)	256.5
Adjusted Level of Significance	0.0482	Adjusted Chi Square Value	256.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	2153	95% Adjusted Gamma UCL (use when n<50)	2157
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.945	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	6.18E-05	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0671	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0777	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	5.58	Mean of logged Data	7.043
Maximum of Logged Data	9.888	SD of logged Data	0.904
Assuming Lognormal Distribution			
95% H-UCL	2038	90% Chebyshev (MVUE) UCL	2194
95% Chebyshev (MVUE) UCL	2410	97.5% Chebyshev (MVUE) UCL	2710
99% Chebyshev (MVUE) UCL	3301		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2253	95% Jackknife UCL	2255
95% Standard Bootstrap UCL	2251	95% Bootstrap-t UCL	2391
95% Hall's Bootstrap UCL	2400	95% Percentile Bootstrap UCL	2273
95% BCA Bootstrap UCL	2335		
90% Chebyshev(Mean, Sd) UCL	2567	95% Chebyshev(Mean, Sd) UCL	2883
97.5% Chebyshev(Mean, Sd) UCL	3321	99% Chebyshev(Mean, Sd) UCL	4182

Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	2883	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***benzothiophene***95-15-8***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	300	Number of Distinct Observations 279
Number of Detects	241	Number of Non-Detects 59
Number of Distinct Detects	228	Number of Distinct Non-Detects 59
Minimum Detect	9.80E-04	Minimum Non-Detect 0.00166
Maximum Detect	0.129	Maximum Non-Detect 0.0514
Variance Detects	1.68E-04	Percent Non-Detects 19.67%
Mean Detects	0.00872	SD Detects 0.013
Median Detects	0.00517	CV Detects 1.488
Skewness Detects	5.674	Kurtosis Detects 41.24
Mean of Logged Detects	-5.16	SD of Logged Detects 0.806
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.486	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.275	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0571	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00776	Standard Error of Mean 6.85E-04
SD	0.0118	95% KM (BCA) UCL 0.00891
95% KM (t) UCL	0.00889	95% KM (Percentile Bootstrap) UCL 0.009
95% KM (z) UCL	0.00889	95% KM Bootstrap t UCL 0.00927
90% KM Chebyshev UCL	0.00982	95% KM Chebyshev UCL 0.0107
97.5% KM Chebyshev UCL	0.012	99% KM Chebyshev UCL 0.0146
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	9.872	Anderson-Darling GOF Test
5% A-D Critical Value	0.776	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.147	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0602	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.34	k star (bias corrected MLE) 1.326
Theta hat (MLE)	0.0065	Theta star (bias corrected MLE) 0.00657
nu hat (MLE)	646.1	nu star (bias corrected) 639.4
MLE Mean (bias corrected)	0.00872	MLE Sd (bias corrected) 0.00757
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.433	nu hat (KM) 259.7
Approximate Chi Square Value (259.72, α)	223.4	Adjusted Chi Square Value (259.72, β) 223.2
95% Gamma Approximate KM-UCL (use when n>=50)	0.00903	95% Gamma Adjusted KM-UCL (use when n<50) 0.00903
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	9.80E-04	Mean 0.90%
Maximum	0.129	Median 0.00652
SD	0.0116	CV 1.297
k hat (MLE)	1.632	k star (bias corrected MLE) 161.70%
Theta hat (MLE)	0.0055	Theta star (bias corrected MLE) 0.00555
nu hat (MLE)	978.9	nu star (bias corrected) 970.4
MLE Mean (bias corrected)	0.00897	MLE Sd (bias corrected) 0.00705
		Adjusted Level of Significance (β) 0.0492
Approximate Chi Square Value (970.45, α)	899.1	Adjusted Chi Square Value (970.45, β) 898.8
95% Gamma Approximate UCL (use when n>=50)	0.00968	95% Gamma Adjusted UCL (use when n<50) 0.00969
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0837	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0571	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00775	Mean in Log Scale -5.245
SD in Original Scale	0.0118	SD in Log Scale 0.75
95% t UCL (assumes normality of ROS data)	0.00888	95% Percentile Bootstrap UCL 0.00891

95% BCA Bootstrap UCL	0.00911	95% Bootstrap t UCL	0.00928
95% H-UCL (Log ROS)	0.0076		

DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal			
Mean in Original Scale	0.00787	Mean in Log Scale	-5.246
SD in Original Scale	0.0119	SD in Log Scale	0.777
95% t UCL (Assumes normality)	0.009	95% H-Stat UCL	0.00778
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.00891

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***benzothiophene***95-15-8***t***ug/kg)

General Statistics			
Total Number of Observations	300	Number of Distinct Observations	257
Number of Detects	241	Number of Non-Detects	59
Number of Distinct Detects	210	Number of Distinct Non-Detects	55
Minimum Detect	2.21	Minimum Non-Detect	12.4
Maximum Detect	2420	Maximum Non-Detect	260
Variance Detects	41191	Percent Non-Detects	19.67%
Mean Detects	84.22	SD Detects	203
Median Detects	31.2	CV Detects	2.41
Skewness Detects	8.003	Kurtosis Detects	80.23
Mean of Logged Detects	3.67	SD of Logged Detects	1.066

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.362	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.343	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0571	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	73.18	Standard Error of Mean	10.61
SD	183.1	95% KM (BCA) UCL	93.09
95% KM (t) UCL	90.69	95% KM (Percentile Bootstrap) UCL	93.16
95% KM (z) UCL	90.64	95% KM Bootstrap t UCL	103.9
90% KM Chebyshev UCL	105	95% KM Chebyshev UCL	119.4
97.5% KM Chebyshev UCL	139.4	99% KM Chebyshev UCL	178.8

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	14.12	Anderson-Darling GOF Test
5% A-D Critical Value	0.795	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.159	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0612	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.78	k star (bias corrected MLE)	0.773
Theta hat (MLE)	108	Theta star (bias corrected MLE)	109
nu hat (MLE)	375.8	nu star (bias corrected)	372.5
MLE Mean (bias corrected)	84.22	MLE Sd (bias corrected)	95.81

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.16	nu hat (KM)	95.8
Approximate Chi Square Value (95.80, α)	74.23	Adjusted Chi Square Value (95.80, β)	74.14
95% Gamma Approximate KM-UCL (use when n>=50)	94.46	95% Gamma Adjusted KM-UCL (use when n<50)	94.57

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	68.25
Maximum	2420	Median	22.95
SD	184.7	CV	2.706
k hat (MLE)	0.379	k star (bias corrected MLE)	0.378
Theta hat (MLE)	180	Theta star (bias corrected MLE)	#####
nu hat (MLE)	227.5	nu star (bias corrected)	226.6
MLE Mean (bias corrected)	68.25	MLE Sd (bias corrected)	111.1
		Adjusted Level of Significance (β)	0.0492

Approximate Chi Square Value (226.57, α)	192.7	Adjusted Chi Square Value (226.57, β)	192.6
95% Gamma Approximate UCL (use when n>=50)	80.24	95% Gamma Adjusted UCL (use when n<50)	80.3
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0906	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	72.76	Mean in Log Scale	3.579
SD in Original Scale	183.3	SD in Log Scale	0.986
95% t UCL (assumes normality of ROS data)	90.23	95% Percentile Bootstrap UCL	91.81
95% BCA Bootstrap UCL	98.98	95% Bootstrap t UCL	103
95% H-UCL (Log ROS)	65.74		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	76.19	Mean in Log Scale	3.656
SD in Original Scale	182.9	SD in Log Scale	0.995
95% t UCL (Assumes normality)	93.61	95% H-Stat UCL	71.83
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	119.4		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***beryllium 7***13966-02-4***t***pci/g)			
General Statistics			
Total Number of Observations	16	Number of Distinct Observations	16
Number of Detects	11	Number of Non-Detects	5
Number of Distinct Detects	11	Number of Distinct Non-Detects	5
Minimum Detect	0.606	Minimum Non-Detect	0.324
Maximum Detect	4.363	Maximum Non-Detect	0.65
Variance Detects	0.992	Percent Non-Detects	31.25%
Mean Detects	1.583	SD Detects	0.996
Median Detects	1.326	CV Detects	0.629
Skewness Detects	2.462	Kurtosis Detects	7.192
Mean of Logged Detects	0.331	SD of Logged Detects	0.502
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.72	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.3	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.193	Standard Error of Mean	0.256
SD	0.978	95% KM (BCA) UCL	1.702
95% KM (t) UCL	1.643	95% KM (Percentile Bootstrap) UCL	1.65
95% KM (z) UCL	1.615	95% KM Bootstrap t UCL	1.877
90% KM Chebyshev UCL	1.963	95% KM Chebyshev UCL	2.311
97.5% KM Chebyshev UCL	2.795	99% KM Chebyshev UCL	3.745
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.549	Anderson-Darling GOF Test	
5% A-D Critical Value	0.733	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.219	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.256	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	4.06	k star (bias corrected MLE)	3.013
Theta hat (MLE)	0.39	Theta star (bias corrected MLE)	0.525
nu hat (MLE)	89.32	nu star (bias corrected)	66.29
MLE Mean (bias corrected)	1.583	MLE Sd (bias corrected)	0.912
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.49	nu hat (KM)	47.67
Approximate Chi Square Value (47.67, α)	32.83	Adjusted Chi Square Value (47.67, β)	31.43
95% Gamma Approximate KM-UCL (use when n>=50)	1.733	95% Gamma Adjusted KM-UCL (use when n<50)	1.81
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 1.092
Maximum	4.363	Median 1.103
SD	1.109	CV 1.015
k hat (MLE)	0.49	k star (bias corrected MLE) 0.44
Theta hat (MLE)	2.226	Theta star (bias corrected MLE) 2.48
nu hat (MLE)	15.69	nu star (bias corrected) 1408.00%
MLE Mean (bias corrected)	1.092	MLE Sd (bias corrected) 1.646
		Adjusted Level of Significance (β) 0.0335
Approximate Chi Square Value (14.08, α)	6.629	Adjusted Chi Square Value (14.08, β) 6.055
95% Gamma Approximate UCL (use when n>=50)	2.319	95% Gamma Adjusted UCL (use when n<50) 2.539
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.936	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.192	Lilliefors GOF Test
5% Lilliefors Critical Value	0.267	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.225	Mean in Log Scale -0.031
SD in Original Scale	0.981	SD in Log Scale 0.69
95% t UCL (assumes normality of ROS data)	1.655	95% Percentile Bootstrap UCL 1.647
95% BCA Bootstrap UCL	1.803	95% Bootstrap t UCL 1.935
95% H-UCL (Log ROS)	1.84E+00	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-0.117	95% H-UCL (KM -Log) 1.94
KM SD (logged)	0.777	95% Critical H Value (KM-Log) 2.38
KM Standard Error of Mean (logged)	0.204	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	1.162	Mean in Log Scale -0.236
SD in Original Scale	1.039	SD in Log Scale 0.972
95% t UCL (Assumes normality)	1.617	95% H-Stat UCL 2.469
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (Percentile Bootstrap) UCL	1.65	95% GROS Adjusted Gamma UCL 2.539
95% Adjusted Gamma KM-UCL	1.81	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***beryllium***7440-41-7***t***mg/kg)		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 304
Number of Detects	363	Number of Non-Detects 3
Number of Distinct Detects	302	Number of Distinct Non-Detects 3
Minimum Detect	0.105	Minimum Non-Detect 0.304
Maximum Detect	1.87	Maximum Non-Detect 0.667
Variance Detects	0.0755	Percent Non-Detects 0.82%
Mean Detects	0.676	SD Detects 0.275
Median Detects	0.692	CV Detects 0.407
Skewness Detects	0.111	Kurtosis Detects 0.16
Mean of Logged Detects	-0.499	SD of Logged Detects 0.506
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.976	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0.0217	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.0509	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0465	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.673	Standard Error of Mean 0.0144
SD	0.275	95% KM (BCA) UCL 0.697
95% KM (t) UCL	0.697	95% KM (Percentile Bootstrap) UCL 0.697
95% KM (z) UCL	0.697	95% KM Bootstrap t UCL 0.697
90% KM Chebyshev UCL	0.716	95% KM Chebyshev UCL 0.736
97.5% KM Chebyshev UCL	0.763	99% KM Chebyshev UCL 0.816

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	5.608	Anderson-Darling GOF Test
5% A-D Critical Value	0.757	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0864	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0479	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	4.849	k star (bias corrected MLE) 4.81
Theta hat (MLE)	0.139	Theta star (bias corrected MLE) 0.14
nu hat (MLE)	3520	nu star (bias corrected) 3492
MLE Mean (bias corrected)	0.676	MLE Sd (bias corrected) 0.308
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	5.971	nu hat (KM) 4371
Approximate Chi Square Value (N/A, α)	4218	Adjusted Chi Square Value (N/A, β) 4217
95% Gamma Approximate KM-UCL (use when n>=50)	0.697	95% Gamma Adjusted KM-UCL (use when n<50) 0.697
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.105	Mean 0.673
Maximum	1.87	Median 0.687
SD	0.275	CV 0.408
k hat (MLE)	4.838	k star (bias corrected MLE) 4.8
Theta hat (MLE)	0.139	Theta star (bias corrected MLE) 0.14
nu hat (MLE)	3542	nu star (bias corrected) 3514
MLE Mean (bias corrected)	0.673	MLE Sd (bias corrected) 0.307
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	3377	Adjusted Chi Square Value (N/A, β) 3377
95% Gamma Approximate UCL (use when n>=50)	0.701	95% Gamma Adjusted UCL (use when n<50) 0.701
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.116	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0465	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.673	Mean in Log Scale -0.503
SD in Original Scale	0.275	SD in Log Scale 0.507
95% t UCL (assumes normality of ROS data)	0.697	95% Percentile Bootstrap UCL 0.697
95% BCA Bootstrap UCL	0.697	95% Bootstrap t UCL 0.696
95% H-UCL (Log ROS)	0.721	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.672	Mean in Log Scale -0.506
SD in Original Scale	0.276	SD in Log Scale 0.512
95% t UCL (Assumes normality)	0.696	95% H-Stat UCL 0.721
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.697	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***beryllium***7440-41-7***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 365
Number of Detects	363	Number of Non-Detects 3
Number of Distinct Detects	362	Number of Distinct Non-Detects 3
Minimum Detect	0.0108	Minimum Non-Detect 0.0216
Maximum Detect	0.491	Maximum Non-Detect 0.0377
Variance Detects	0.00564	Percent Non-Detects 0.82%
Mean Detects	0.106	SD Detects 0.0751
Median Detects	0.087	CV Detects 0.71
Skewness Detects	1.143	Kurtosis Detects 1.615
Mean of Logged Detects	-2.513	SD of Logged Detects 0.768
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.894	Normal GOF Test on Detected Observations Only

5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.124	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0465	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.105	Standard Error of Mean 0.00393
SD	0.0751	95% KM (BCA) UCL 0.112
95% KM (t) UCL	0.112	95% KM (Percentile Bootstrap) UCL 0.111
95% KM (z) UCL	0.112	95% KM Bootstrap t UCL 0.112
90% KM Chebyshev UCL	0.117	95% KM Chebyshev UCL 0.122
97.5% KM Chebyshev UCL	0.13	99% KM Chebyshev UCL 0.144
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.092	Anderson-Darling GOF Test
5% A-D Critical Value	0.766	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0571	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0483	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.024	k star (bias corrected MLE) 2.009
Theta hat (MLE)	0.0523	Theta star (bias corrected MLE) 0.0527
nu hat (MLE)	1469	nu star (bias corrected) 1458
MLE Mean (bias corrected)	0.106	MLE Sd (bias corrected) 0.0747
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.961	nu hat (KM) 1435
Approximate Chi Square Value (N/A, α)	1348	Adjusted Chi Square Value (N/A, β) 1348
95% Gamma Approximate KM-UCL (use when n>=50)	0.112	95% Gamma Adjusted KM-UCL (use when n<50) 0.112
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0107	Mean 0.105
Maximum	0.491	Median 0.0867
SD	0.0752	CV 0.716
k hat (MLE)	1.983	k star (bias corrected MLE) 1.968
Theta hat (MLE)	0.053	Theta star (bias corrected MLE) 0.0534
nu hat (MLE)	1451	nu star (bias corrected) 1441
MLE Mean (bias corrected)	0.105	MLE Sd (bias corrected) 0.0749
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1354	Adjusted Chi Square Value (N/A, β) 1353
95% Gamma Approximate UCL (use when n>=50)	0.112	95% Gamma Adjusted UCL (use when n<50) 0.112
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0676	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0465	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.105	Mean in Log Scale -2.523
SD in Original Scale	0.0752	SD in Log Scale 0.773
95% t UCL (assumes normality of ROS data)	0.112	95% Percentile Bootstrap UCL 0.111
95% BCA Bootstrap UCL	0.112	95% Bootstrap t UCL 0.112
95% H-UCL (Log ROS)	0.117	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.105	Mean in Log Scale -2.527
SD in Original Scale	0.0752	SD in Log Scale 0.781
95% t UCL (Assumes normality)	0.112	95% H-Stat UCL 0.117
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.112	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***biphenyl (1,1'-biphenyl)***92-52-4***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	331	Number of Distinct Observations 325

Number of Detects	214	Number of Non-Detects	117
Number of Distinct Detects	208	Number of Distinct Non-Detects	117
Minimum Detect	0.00231	Minimum Non-Detect	0.0462
Maximum Detect	4.257	Maximum Non-Detect	6.045
Variance Detects	0.262	Percent Non-Detects	35.35%
Mean Detects	0.0991	SD Detects	0.512
Median Detects	0.0148	CV Detects	5.167
Skewness Detects	6.951	Kurtosis Detects	49.22
Mean of Logged Detects	-4.031	SD of Logged Detects	1.083
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.18	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.474	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0606	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0734	Standard Error of Mean	0.0237
SD	0.421	95% KM (BCA) UCL	0.12
95% KM (t) UCL	0.113	95% KM (Percentile Bootstrap) UCL	0.117
95% KM (z) UCL	0.112	95% KM Bootstrap t UCL	0.143
90% KM Chebyshev UCL	0.145	95% KM Chebyshev UCL	0.177
97.5% KM Chebyshev UCL	0.221	99% KM Chebyshev UCL	0.309
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	47.58	Anderson-Darling GOF Test	
5% A-D Critical Value	0.849	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.383	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0666	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.385	k star (bias corrected MLE)	38.30%
Theta hat (MLE)	0.258	Theta star (bias corrected MLE)	0.259
nu hat (MLE)	164.7	nu star (bias corrected)	163.8
MLE Mean (bias corrected)	0.0991	MLE Sd (bias corrected)	0.16
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0304	nu hat (KM)	20.13
Approximate Chi Square Value (20.13, α)	10.95	Adjusted Chi Square Value (20.13, β)	10.92
95% Gamma Approximate KM-UCL (use when n>=50)	0.135	95% Gamma Adjusted KM-UCL (use when n<50)	0.135
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00231	Mean	0.0676
Maximum	4.257	Median	0.01
SD	0.414	CV	6.118
k hat (MLE)	0.423	k star (bias corrected MLE)	0.421
Theta hat (MLE)	0.16	Theta star (bias corrected MLE)	0.16
nu hat (MLE)	280.2	nu star (bias corrected)	279
MLE Mean (bias corrected)	0.0676	MLE Sd (bias corrected)	0.104
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (279.01, α)	241.3	Adjusted Chi Square Value (279.01, β)	241.2
95% Gamma Approximate UCL (use when n>=50)	0.0782	95% Gamma Adjusted UCL (use when n<50)	0.0782
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.15	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0606	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0701	Mean in Log Scale	-4.05
SD in Original Scale	0.413	SD in Log Scale	0.87
95% t UCL (assumes normality of ROS data)	0.108	95% Percentile Bootstrap UCL	0.11
95% BCA Bootstrap UCL	0.123	95% Bootstrap t UCL	0.136
95% H-UCL (Log ROS)	0.028		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.247	Mean in Log Scale	-3.201
SD in Original Scale	0.654	SD in Log Scale	1.632
95% t UCL (Assumes normality)	0.307	95% H-Stat UCL	0.197
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (Chebyshev) UCL	0.177	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***biphenyl (1,1'-biphenyl)***92-52-4***t***ug/kg)		
General Statistics		
Total Number of Observations	331	Number of Distinct Observations 247
Number of Detects	214	Number of Non-Detects 117
Number of Distinct Detects	179	Number of Distinct Non-Detects 71
Minimum Detect	6.8	Minimum Non-Detect 440
Maximum Detect	48470	Maximum Non-Detect 70480
Variance Detects	31592465	Percent Non-Detects 35.35%
Mean Detects	1012	SD Detects 5621
Median Detects	110.5	CV Detects 5.555
Skewness Detects	7.227	Kurtosis Detects 53.71
Mean of Logged Detects	4.903	SD of Logged Detects 1.215
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.173	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.473	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0606	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	729.8	Standard Error of Mean #####
SD	4589	95% KM (BCA) UCL 1223
95% KM (t) UCL	1153	95% KM (Percentile Bootstrap) UCL 1191
95% KM (z) UCL	1152	95% KM Bootstrap t UCL 1451
90% KM Chebyshev UCL	1499	95% KM Chebyshev UCL 1848
97.5% KM Chebyshev UCL	2332	99% KM Chebyshev UCL 3282
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	46.09	Anderson-Darling GOF Test
5% A-D Critical Value	0.861	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.36	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0671	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.336	k star (bias corrected MLE) 33.40%
Theta hat (MLE)	3014	Theta star (bias corrected MLE) 3028
nu hat (MLE)	143.7	nu star (bias corrected) 143
MLE Mean (bias corrected)	1012	MLE Sd (bias corrected) 1750
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0253	nu hat (KM) 16.75
Approximate Chi Square Value (16.75, α)	8.49	Adjusted Chi Square Value (16.75, β) 8.465
95% Gamma Approximate KM-UCL (use when n>=50)	1439	95% Gamma Adjusted KM-UCL (use when n<50) 1444
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 713.4
Maximum	48470	Median 81.6
SD	4544	CV 6.37
k hat (MLE)	0.177	k star (bias corrected MLE) 0.178
Theta hat (MLE)	4020	Theta star (bias corrected MLE) 4011
nu hat (MLE)	117.5	nu star (bias corrected) 117.7
MLE Mean (bias corrected)	713.4	MLE Sd (bias corrected) 1691
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (117.75, α)	93.69	Adjusted Chi Square Value (117.75, β) 93.6
95% Gamma Approximate UCL (use when n>=50)	896.5	95% Gamma Adjusted UCL (use when n<50) 897.4
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.15	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0606	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	702.8	Mean in Log Scale 4.875
SD in Original Scale	4535	SD in Log Scale 1.013

95% t UCL (assumes normality of ROS data)	1114	95% Percentile Bootstrap UCL	1126
95% BCA Bootstrap UCL	1271	95% Bootstrap t UCL	1523
95% H-UCL (Log ROS)	246.5		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2436	Mean in Log Scale	5.731
SD in Original Scale	6923	SD in Log Scale	1.745
95% t UCL (Assumes normality)	3064	95% H-Stat UCL	1853
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	1848		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***bis(2-ethylhexyl)phthalate***117-81-7***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
		Number of Missing Observations	0
Minimum	0.192	Mean	4.469
Maximum	69.24	Median	2.614
SD	6.213	Std. Error of Mean	0.325
Coefficient of Variation	1.39	Skewness	4.904
Normal GOF Test			
Shapiro Wilk Test Statistic	0.606	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.246	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	5.005	95% Adjusted-CLT UCL (Chen-1995)	5.092
		95% Modified-t UCL (Johnson-1978)	501.90%
Gamma GOF Test			
A-D Test Statistic	4.983	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.784	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0886	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0489	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.024	k star (bias corrected MLE)	1.017
Theta hat (MLE)	4.365	Theta star (bias corrected MLE)	4.393
nu hat (MLE)	749.5	nu star (bias corrected)	744.7
MLE Mean (bias corrected)	4.469	MLE Sd (bias corrected)	4.431
		Approximate Chi Square Value (0.05)	682.4
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	682.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	4.877	95% Adjusted Gamma UCL (use when n<50)	4.879
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.982	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.31	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0263	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-1.65	Mean of logged Data	0.935
Maximum of Logged Data	4.238	SD of logged Data	1.059
Assuming Lognormal Distribution			
95% H-UCL	5.036	90% Chebyshev (MVUE) UCL	5.371
95% Chebyshev (MVUE) UCL	5.787	97.5% Chebyshev (MVUE) UCL	6.364
99% Chebyshev (MVUE) UCL	7.498		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			

Nonparametric Distribution Free UCLs			
95% CLT UCL	5.003	95% Jackknife UCL	5.005
95% Standard Bootstrap UCL	4.998	95% Bootstrap-t UCL	5.132
95% Hall's Bootstrap UCL	5.165	95% Percentile Bootstrap UCL	5.04
95% BCA Bootstrap UCL	5.065		
90% Chebyshev(Mean, Sd) UCL	5.443	95% Chebyshev(Mean, Sd) UCL	5.885
97.5% Chebyshev(Mean, Sd) UCL	6.497	99% Chebyshev(Mean, Sd) UCL	7.7
Suggested UCL to Use			
95% H-UCL	5.036		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

RESULT_VALUE (studyarea***bis(2-ethylhexyl)phthalate***117-81-7***t***ug/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	289
		Number of Missing Observations	0
Minimum	124	Mean	43916
Maximum	511000	Median	23650
SD	62480	Std. Error of Mean	3266
Coefficient of Variation	1.423	Skewness	3.643
Normal GOF Test			
Shapiro Wilk Test Statistic	0.647	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.242	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	49302	95% Adjusted-CLT UCL (Chen-1995)	49953
		95% Modified-t UCL (Johnson-1978)	49405
Gamma GOF Test			
A-D Test Statistic	2.016	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.8	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0615	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0495	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.728	k star (bias corrected MLE)	0.723
Theta hat (MLE)	60363	Theta star (bias corrected MLE)	60708
nu hat (MLE)	532.6	nu star (bias corrected)	#####
MLE Mean (bias corrected)	43916	MLE Sd (bias corrected)	51634
		Approximate Chi Square Value (0.05)	477.2
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	477
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	48736	95% Adjusted Gamma UCL (use when n<50)	48756
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.971	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	6.05E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0712	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.82	Mean of logged Data	986.40%
Maximum of Logged Data	13.14	SD of logged Data	1.426
Assuming Lognormal Distribution			
95% H-UCL	64118	90% Chebyshev (MVUE) UCL	69450
95% Chebyshev (MVUE) UCL	76961	97.5% Chebyshev (MVUE) UCL	87385
99% Chebyshev (MVUE) UCL	107862		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			

Nonparametric Distribution Free UCLs			
95% CLT UCL	49288	95% Jackknife UCL	49302
95% Standard Bootstrap UCL	49423	95% Bootstrap-t UCL	50310
95% Hall's Bootstrap UCL	50195	95% Percentile Bootstrap UCL	49221
95% BCA Bootstrap UCL	49979		
90% Chebyshev(Mean, Sd) UCL	53714	95% Chebyshev(Mean, Sd) UCL	58152
97.5% Chebyshev(Mean, Sd) UCL	64312	99% Chebyshev(Mean, Sd) UCL	76411
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	58152		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***butylbenzyl phthalate***85-68-7***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	361
Number of Detects	257	Number of Non-Detects	109
Number of Distinct Detects	252	Number of Distinct Non-Detects	109
Minimum Detect	0.00693	Minimum Non-Detect	0.0186
Maximum Detect	0.488	Maximum Non-Detect	6.045
Variance Detects	0.00367	Percent Non-Detects	29.78%
Mean Detects	0.079	SD Detects	0.0606
Median Detects	0.066	CV Detects	0.767
Skewness Detects	3.01	Kurtosis Detects	13.49
Mean of Logged Detects	-2.754	SD of Logged Detects	0.659
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.754	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.144	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0553	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.075	Standard Error of Mean	0.0033
SD	0.0569	95% KM (BCA) UCL	0.0801
95% KM (t) UCL	0.0805	95% KM (Percentile Bootstrap) UCL	0.0808
95% KM (z) UCL	0.0804	95% KM Bootstrap t UCL	0.0814
90% KM Chebyshev UCL	0.0849	95% KM Chebyshev UCL	0.0894
97.5% KM Chebyshev UCL	0.0956	99% KM Chebyshev UCL	0.108
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.659	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0603	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0576	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.475	k star (bias corrected MLE)	2.448
Theta hat (MLE)	0.0319	Theta star (bias corrected MLE)	0.0323
nu hat (MLE)	1272	nu star (bias corrected)	1258
MLE Mean (bias corrected)	0.079	MLE Sd (bias corrected)	0.0505
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.74	nu hat (KM)	1273
Approximate Chi Square Value (N/A, α)	1191	Adjusted Chi Square Value (N/A, β)	1191
95% Gamma Approximate KM-UCL (use when n>=50)	0.0802	95% Gamma Adjusted KM-UCL (use when n<50)	0.0802
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00693	Mean	0.0725
Maximum	0.488	Median	0.0629
SD	0.0521	CV	0.719
k hat (MLE)	3.061	k star (bias corrected MLE)	3.038
Theta hat (MLE)	0.0237	Theta star (bias corrected MLE)	0.0239
nu hat (MLE)	2241	nu star (bias corrected)	2224
MLE Mean (bias corrected)	0.0725	MLE Sd (bias corrected)	0.0416
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2115	Adjusted Chi Square Value (N/A, β)	2115
95% Gamma Approximate UCL (use when n>=50)	0.0762	95% Gamma Adjusted UCL (use when n<50)	0.0762
Lognormal GOF Test on Detected Observations Only			

Lilliefors Test Statistic	0.0403	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0553	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0721	Mean in Log Scale	-2.797
SD in Original Scale	0.0521	SD in Log Scale	0.567
95% t UCL (assumes normality of ROS data)	0.0766	95% Percentile Bootstrap UCL	0.0768
95% BCA Bootstrap UCL	0.0774	95% Bootstrap t UCL	0.0779
95% H-UCL (Log ROS)	0.0756		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-2.804	95% H-UCL (KM -Log)	0.0803
KM SD (logged)	0.659	95% Critical H Value (KM-Log)	1.883
KM Standard Error of Mean (logged)	0.04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.246	Mean in Log Scale	-2.388
SD in Original Scale	0.538	SD in Log Scale	1.146
95% t UCL (Assumes normality)	0.293	95% H-Stat UCL	0.203
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0801		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***butylbenzyl phthalate***85-68-7***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	287
Number of Detects	257	Number of Non-Detects	109
Number of Distinct Detects	213	Number of Distinct Non-Detects	90
Minimum Detect	32.6	Minimum Non-Detect	112
Maximum Detect	3420	Maximum Non-Detect	71570
Variance Detects	291132	Percent Non-Detects	29.78%
Mean Detects	676.2	SD Detects	539.6
Median Detects	540	CV Detects	0.798
Skewness Detects	1.44	Kurtosis Detects	2.99
Mean of Logged Detects	6.157	SD of Logged Detects	0.938
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.883	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.116	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0553	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	624.4	Standard Error of Mean	30.14
SD	517.5	95% KM (BCA) UCL	672.9
95% KM (t) UCL	674.1	95% KM (Percentile Bootstrap) UCL	674.6
95% KM (z) UCL	674	95% KM Bootstrap t UCL	678
90% KM Chebyshev UCL	714.8	95% KM Chebyshev UCL	755.8
97.5% KM Chebyshev UCL	812.7	99% KM Chebyshev UCL	924.3
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.311	Anderson-Darling GOF Test	
5% A-D Critical Value	0.771	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0363	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0581	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.534	k star (bias corrected MLE)	1.519
Theta hat (MLE)	440.7	Theta star (bias corrected MLE)	445.1
nu hat (MLE)	788.7	nu star (bias corrected)	780.8
MLE Mean (bias corrected)	676.2	MLE Sd (bias corrected)	548.6
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.456	nu hat (KM)	1066
Approximate Chi Square Value (N/A, α)	991	Adjusted Chi Square Value (N/A, β)	990.7
95% Gamma Approximate KM-UCL (use when n>=50)	671.5	95% Gamma Adjusted KM-UCL (use when n<50)	671.7

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	32.6 Mean	601.8
Maximum	3420 Median	491.1
SD	473.5 CV	0.787
k hat (MLE)	1.832 k star (bias corrected MLE)	1.819
Theta hat (MLE)	328.5 Theta star (bias corrected MLE)	330.9
nu hat (MLE)	1341 nu star (bias corrected)	1331
MLE Mean (bias corrected)	601.8 MLE Sd (bias corrected)	446.2
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1248 Adjusted Chi Square Value (N/A, β)	1247
95% Gamma Approximate UCL (use when n>=50)	642.2 95% Gamma Adjusted UCL (use when n<50)	642.3
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0707 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0553 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	587.4 Mean in Log Scale	6.071
SD in Original Scale	477.5 SD in Log Scale	0.823
95% t UCL (assumes normality of ROS data)	628.6 95% Percentile Bootstrap UCL	627.4
95% BCA Bootstrap UCL	630 95% Bootstrap t UCL	631.6
95% H-UCL (Log ROS)	662.1	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	2387 Mean in Log Scale	6.54
SD in Original Scale	5730 SD in Log Scale	1.358
95% t UCL (Assumes normality)	2881 95% H-Stat UCL	2071
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (Percentile Bootstrap) UCL	674.6 95% GROS Approximate Gamma UCL	642.2
95% Approximate Gamma KM-UCL	671.5	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***c11-c22 aromatics adjusted***aromatic11-22a***t***mg/kg)		
General Statistics		
Total Number of Observations	204 Number of Distinct Observations	190
Number of Detects	191 Number of Non-Detects	13
Number of Distinct Detects	179 Number of Distinct Non-Detects	13
Minimum Detect	14.5 Minimum Non-Detect	16.3
Maximum Detect	14800 Maximum Non-Detect	24.9
Variance Detects	1609455 Percent Non-Detects	6.37%
Mean Detects	651 SD Detects	1269
Median Detects	358 CV Detects	1.949
Skewness Detects	8.056 Kurtosis Detects	83.67
Mean of Logged Detects	5.7 SD of Logged Detects	1.302
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.436 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.308 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0641 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	610.4 Standard Error of Mean	86.63
SD	1234 95% KM (BCA) UCL	784
95% KM (t) UCL	753.6 95% KM (Percentile Bootstrap) UCL	765.3
95% KM (z) UCL	752.9 95% KM Bootstrap t UCL	874.2
90% KM Chebyshev UCL	870.3 95% KM Chebyshev UCL	988.1
97.5% KM Chebyshev UCL	1151 99% KM Chebyshev UCL	1472
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.82 Anderson-Darling GOF Test	
5% A-D Critical Value	0.795 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0716 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0686 Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.767 k star (bias corrected MLE)	0.758
Theta hat (MLE)	848.8 Theta star (bias corrected MLE)	858.4
nu hat (MLE)	293 nu star (bias corrected)	289.7
MLE Mean (bias corrected)	651 MLE Sd (bias corrected)	747.5

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.245 nu hat (KM)	99.82
Approximate Chi Square Value (99.82, α)	77.77 Adjusted Chi Square Value (99.82, β)	77.63
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	783.5 95% Gamma Adjusted KM-UCL (use when $n < 50$)	784.9

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01 Mean	609.5
Maximum	14800 Median	296
SD	1238 CV	2.031
k hat (MLE)	0.469 k star (bias corrected MLE)	0.465
Theta hat (MLE)	1300 Theta star (bias corrected MLE)	1311
nu hat (MLE)	191.2 nu star (bias corrected)	189.7
MLE Mean (bias corrected)	609.5 MLE Sd (bias corrected)	893.7
	Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (189.73, α)	158.9 Adjusted Chi Square Value (189.73, β)	158.7
95% Gamma Approximate UCL (use when $n \geq 50$)	727.9 95% Gamma Adjusted UCL (use when $n < 50$)	728.8

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic 0.072 Lilliefors GOF Test

5% Lilliefors Critical Value 0.0641 Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6.11E+02 Mean in Log Scale	5.521
SD in Original Scale	1237 SD in Log Scale	1.437
95% t UCL (assumes normality of ROS data)	753.7 95% Percentile Bootstrap UCL	763.1
95% BCA Bootstrap UCL	830.6 95% Bootstrap t UCL	864.6
95% H-UCL (Log ROS)	906.1	

DL/2 Statistics

DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	610.1 Mean in Log Scale	5.483
SD in Original Scale	1237 SD in Log Scale	1.512
95% t UCL (Assumes normality)	753.3 95% H-Stat UCL	996.5

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL 988.1

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***c11-c22 aromatics adjusted***aromatic11-22a***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	204 Number of Distinct Observations	204
Number of Detects	191 Number of Non-Detects	13
Number of Distinct Detects	191 Number of Distinct Non-Detects	13
Minimum Detect	2.791 Minimum Non-Detect	1.957
Maximum Detect	1254 Maximum Non-Detect	6.141
Variance Detects	11316 Percent Non-Detects	6.37%
Mean Detects	63.91 SD Detects	106.4
Median Detects	41.92 CV Detects	1.664
Skewness Detects	7.981 Kurtosis Detects	83.76
Mean of Logged Detects	3.646 SD of Logged Detects	0.975

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.454 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.283 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0641 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	60.01	Standard Error of Mean	7.283
SD	103.7	95% KM (BCA) UCL	74.32
95% KM (t) UCL	72.04	95% KM (Percentile Bootstrap) UCL	73.05
95% KM (z) UCL	71.98	95% KM Bootstrap t UCL	80.56
90% KM Chebyshev UCL	81.85	95% KM Chebyshev UCL	91.75
97.5% KM Chebyshev UCL	105.5	99% KM Chebyshev UCL	132.5

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.009	Anderson-Darling GOF Test	
5% A-D Critical Value	0.781	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.105	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0677	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	1.114	k star (bias corrected MLE)	1.1
Theta hat (MLE)	57.37	Theta star (bias corrected MLE)	58.1
nu hat (MLE)	425.6	nu star (bias corrected)	420.2
MLE Mean (bias corrected)	63.91	MLE Sd (bias corrected)	60.93

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.335	nu hat (KM)	136.5
Approximate Chi Square Value (136.49, α)	110.5	Adjusted Chi Square Value (136.49, β)	110.3
95% Gamma Approximate KM-UCL (use when n>=50)	74.12	95% Gamma Adjusted KM-UCL (use when n<50)	74.23

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	59.84
Maximum	1254	Median	35.01
SD	104.1	CV	1.74
k hat (MLE)	0.631	k star (bias corrected MLE)	0.625
Theta hat (MLE)	94.81	Theta star (bias corrected MLE)	95.72
nu hat (MLE)	257.5	nu star (bias corrected)	255.1
MLE Mean (bias corrected)	59.84	MLE Sd (bias corrected)	75.68
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (255.05, α)	219.1	Adjusted Chi Square Value (255.05, β)	218.8
95% Gamma Approximate UCL (use when n>=50)	69.66	95% Gamma Adjusted UCL (use when n<50)	69.74

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0461	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0641	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	60.12	Mean in Log Scale	3.508
SD in Original Scale	103.9	SD in Log Scale	1.082
95% t UCL (assumes normality of ROS data)	72.15	95% Percentile Bootstrap UCL	72.85
95% BCA Bootstrap UCL	78.28	95% Bootstrap t UCL	80.43
95% H-UCL (Log ROS)	70.95		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	3.474	95% H-UCL (KM -Log)	75.17
KM SD (logged)	1.151	95% Critical H Value (KM-Log)	2.274
KM Standard Error of Mean (logged)	0.0812		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	60	Mean in Log Scale	3.47
SD in Original Scale	104	SD in Log Scale	1.162
95% t UCL (Assumes normality)	72.03	95% H-Stat UCL	76.09
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	74.32
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***c11-c22 aromatics unadjusted***aromatic11-22u***t***mg/kg)

General Statistics

Total Number of Observations	204	Number of Distinct Observations	192
Number of Detects	191	Number of Non-Detects	13

Number of Distinct Detects	181	Number of Distinct Non-Detects	13
Minimum Detect	14.5	Minimum Non-Detect	16.3
Maximum Detect	14800	Maximum Non-Detect	24.9
Variance Detects	1628929	Percent Non-Detects	6.37%
Mean Detects	661.9	SD Detects	1276
Median Detects	360	CV Detects	1.928
Skewness Detects	7.92	Kurtosis Detects	81.45
Mean of Logged Detects	5.715	SD of Logged Detects	1.306
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.443	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.306	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0641	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	620.7	Standard Error of Mean	87.17
SD	1242	95% KM (BCA) UCL	792
95% KM (t) UCL	764.8	95% KM (Percentile Bootstrap) UCL	778.9
95% KM (z) UCL	764.1	95% KM Bootstrap t UCL	867.5
90% KM Chebyshev UCL	882.3	95% KM Chebyshev UCL	1001
97.5% KM Chebyshev UCL	1165	99% KM Chebyshev UCL	1488
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.793	Anderson-Darling GOF Test	
5% A-D Critical Value	0.795	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0729	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0686	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.765	k star (bias corrected MLE)	0.756
Theta hat (MLE)	865.5	Theta star (bias corrected MLE)	875.3
nu hat (MLE)	292.2	nu star (bias corrected)	288.9
MLE Mean (bias corrected)	661.9	MLE Sd (bias corrected)	761.2
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.25	nu hat (KM)	101.9
Approximate Chi Square Value (101.95, α)	79.65	Adjusted Chi Square Value (101.95, β)	79.51
95% Gamma Approximate KM-UCL (use when n>=50)	794.5	95% Gamma Adjusted KM-UCL (use when n<50)	795.9
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	619.8
Maximum	14800	Median	300.5
SD	1245	CV	2.009
k hat (MLE)	0.468	k star (bias corrected MLE)	0.464
Theta hat (MLE)	1325	Theta star (bias corrected MLE)	1336
nu hat (MLE)	190.8	nu star (bias corrected)	189.3
MLE Mean (bias corrected)	619.8	MLE Sd (bias corrected)	909.8
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (189.33, α)	158.5	Adjusted Chi Square Value (189.33, β)	158.3
95% Gamma Approximate UCL (use when n>=50)	740.3	95% Gamma Adjusted UCL (use when n<50)	741.3
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0823	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0641	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	620.9	Mean in Log Scale	5.534
SD in Original Scale	1245	SD in Log Scale	1.441
95% t UCL (assumes normality of ROS data)	764.9	95% Percentile Bootstrap UCL	772
95% BCA Bootstrap UCL	847.2	95% Bootstrap t UCL	883.5
95% H-UCL (Log ROS)	926		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	620.4	Mean in Log Scale	5.496
SD in Original Scale	1245	SD in Log Scale	1.517
95% t UCL (Assumes normality)	764.4	95% H-Stat UCL	1020
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			

95% KM (Chebyshev) UCL		1001	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***c11-c22 aromatics unadjusted***aromatic11-22u***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	204	Number of Distinct Observations	204
Number of Detects	191	Number of Non-Detects	13
Number of Distinct Detects	191	Number of Distinct Non-Detects	13
Minimum Detect	2.791	Minimum Non-Detect	1.957
Maximum Detect	1254	Maximum Non-Detect	6.141
Variance Detects	11862	Percent Non-Detects	6.37%
Mean Detects	65.95	SD Detects	108.9
Median Detects	43.43	CV Detects	1.651
Skewness Detects	7.529	Kurtosis Detects	75.83
Mean of Logged Detects	3.66	SD of Logged Detects	0.999
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.467	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.281	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0641	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	61.93	Standard Error of Mean	7.457
SD	106.2	95% KM (BCA) UCL	76.54
95% KM (t) UCL	74.25	95% KM (Percentile Bootstrap) UCL	75.51
95% KM (z) UCL	74.2	95% KM Bootstrap t UCL	81.74
90% KM Chebyshev UCL	84.3	95% KM Chebyshev UCL	94.44
97.5% KM Chebyshev UCL	108.5	99% KM Chebyshev UCL	136.1
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.054	Anderson-Darling GOF Test	
5% A-D Critical Value	0.782	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.104	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0678	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.081	k star (bias corrected MLE)	1.068
Theta hat (MLE)	60.99	Theta star (bias corrected MLE)	61.76
nu hat (MLE)	413.1	nu star (bias corrected)	407.9
MLE Mean (bias corrected)	65.95	MLE Sd (bias corrected)	63.82
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.34	nu hat (KM)	138.7
Approximate Chi Square Value (138.66, α)	112.5	Adjusted Chi Square Value (138.66, β)	112.3
95% Gamma Approximate KM-UCL (use when n>=50)	76.37	95% Gamma Adjusted KM-UCL (use when n<50)	76.48
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	61.75
Maximum	1254	Median	35.37
SD	106.6	CV	1.726
k hat (MLE)	0.621	k star (bias corrected MLE)	0.615
Theta hat (MLE)	99.43	Theta star (bias corrected MLE)	100.4
nu hat (MLE)	253.4	nu star (bias corrected)	251
MLE Mean (bias corrected)	61.75	MLE Sd (bias corrected)	78.73
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (251.00, α)	215.3	Adjusted Chi Square Value (251.00, β)	215.1
95% Gamma Approximate UCL (use when n>=50)	71.98	95% Gamma Adjusted UCL (use when n<50)	72.06
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0483	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0641	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	62.04	Mean in Log Scale	3.521
SD in Original Scale	106.4	SD in Log Scale	1.105
95% t UCL (assumes normality of ROS data)	74.35	95% Percentile Bootstrap UCL	74.87
95% BCA Bootstrap UCL	78.75	95% Bootstrap t UCL	83.13
95% H-UCL (Log ROS)	74.04		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	3.491	95% H-UCL (KM -Log)	77.78
KM SD (logged)	1.163	95% Critical H Value (KM-Log)	2.285
KM Standard Error of Mean (logged)	0.082		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	61.91	Mean in Log Scale	3.484
SD in Original Scale	106.5	SD in Log Scale	1.183
95% t UCL (Assumes normality)	74.23	95% H-Stat UCL	79.38
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	76.54

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***c19-c36 aliphatics unadjusted***aliphatic19-36u***t***mg/kg)

General Statistics			
Total Number of Observations	205	Number of Distinct Observations	193
Number of Detects	197	Number of Non-Detects	8
Number of Distinct Detects	185	Number of Distinct Non-Detects	8
Minimum Detect	20.6	Minimum Non-Detect	16.3
Maximum Detect	39000	Maximum Non-Detect	87.4
Variance Detects	11327796	Percent Non-Detects	3.90%
Mean Detects	1718	SD Detects	3366
Median Detects	949	CV Detects	1.959
Skewness Detects	7.786	Kurtosis Detects	79.23
Mean of Logged Detects	6.522	SD of Logged Detects	1.524

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.448	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.307	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0631	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1652	Standard Error of Mean	231.6
SD	3307	95% KM (BCA) UCL	2102
95% KM (t) UCL	2035	95% KM (Percentile Bootstrap) UCL	2081
95% KM (z) UCL	2033	95% KM Bootstrap t UCL	2296
90% KM Chebyshev UCL	2347	95% KM Chebyshev UCL	2661
97.5% KM Chebyshev UCL	3098	99% KM Chebyshev UCL	3956

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.396	Anderson-Darling GOF Test	
5% A-D Critical Value	0.805	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0674	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0674	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.658	k star (bias corrected MLE)	0.651
Theta hat (MLE)	2611	Theta star (bias corrected MLE)	2638
nu hat (MLE)	259.2	nu star (bias corrected)	256.6
MLE Mean (bias corrected)	1718	MLE Sd (bias corrected)	2129

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.249	nu hat (KM)	102.3
Approximate Chi Square Value (102.27, α)	79.94	Adjusted Chi Square Value (102.27, β)	79.8
95% Gamma Approximate KM-UCL (use when n>=50)	2113	95% Gamma Adjusted KM-UCL (use when n<50)	2117

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1651
Maximum	39000	Median	924
SD	3316	CV	2.008
k hat (MLE)	0.483	k star (bias corrected MLE)	0.48
Theta hat (MLE)	3416	Theta star (bias corrected MLE)	3443

nu hat (MLE)	198.2	nu star (bias corrected)	196.6
MLE Mean (bias corrected)	1651	MLE Sd (bias corrected)	2384
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (196.61, α)	165.2	Adjusted Chi Square Value (196.61, β)	165
95% Gamma Approximate UCL (use when n>=50)	1965	95% Gamma Adjusted UCL (use when n<50)	1968

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.118 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0631 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1652	Mean in Log Scale	6.389
SD in Original Scale	3315	SD in Log Scale	1.636
95% t UCL (assumes normality of ROS data)	2035	95% Percentile Bootstrap UCL	2079
95% BCA Bootstrap UCL	2236	95% Bootstrap t UCL	2300
95% H-UCL (Log ROS)	3113		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1652	Mean in Log Scale	6.364
SD in Original Scale	3316	SD in Log Scale	1.691
95% t UCL (Assumes normality)	2034	95% H-Stat UCL	3386
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (Chebyshev) UCL	2661	95% GROS Approximate Gamma UCL	1965
95% Approximate Gamma KM-UCL	2113		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***c19-c36 aliphatics unadjusted***aliphatic19-36u***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	205	Number of Distinct Observations	205
Number of Detects	197	Number of Non-Detects	8
Number of Distinct Detects	197	Number of Distinct Non-Detects	8
Minimum Detect	4.858	Minimum Non-Detect	4.659
Maximum Detect	3305	Maximum Non-Detect	21.16
Variance Detects	76089	Percent Non-Detects	3.90%
Mean Detects	161.7	SD Detects	275.8
Median Detects	104.4	CV Detects	1.706
Skewness Detects	8.187	Kurtosis Detects	87.56
Mean of Logged Detects	4.483	SD of Logged Detects	1.141

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.452
5% Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.285
5% Lilliefors Critical Value	0.0631
Detected Data Not Normal at 5% Significance Level	
Normal GOF Test on Detected Observations Only	
0 Detected Data Not Normal at 5% Significance Level	
Lilliefors GOF Test	
0.0631 Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	155.6	Standard Error of Mean	19
SD	271.4	95% KM (BCA) UCL	189.4
95% KM (t) UCL	187	95% KM (Percentile Bootstrap) UCL	189.8
95% KM (z) UCL	186.9	95% KM Bootstrap t UCL	210.1
90% KM Chebyshev UCL	212.6	95% KM Chebyshev UCL	238.5
97.5% KM Chebyshev UCL	274.3	99% KM Chebyshev UCL	344.7

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	1.788 Anderson-Darling GOF Test
5% A-D Critical Value	0.786 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0913 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	6.64E-02 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.961	k star (bias corrected MLE)	0.95
Theta hat (MLE)	168.2	Theta star (bias corrected MLE)	170.2
nu hat (MLE)	378.7	nu star (bias corrected)	374.3
MLE Mean (bias corrected)	161.7	MLE Sd (bias corrected)	165.9

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.329	nu hat (KM)	134.8

Approximate Chi Square Value (134.80, α)	109	Adjusted Chi Square Value (134.80, β)	108.8
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	192.5	95% Gamma Adjusted KM-UCL (use when $n < 50$)	192.8
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	155.4
Maximum	3305	Median	101.6
SD	272.2	CV	1.752
k hat (MLE)	0.663	k star (bias corrected MLE)	0.657
Theta hat (MLE)	234.3	Theta star (bias corrected MLE)	236.6
nu hat (MLE)	271.9	nu star (bias corrected)	269.3
MLE Mean (bias corrected)	155.4	MLE Sd (bias corrected)	191.7
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (269.29, α)	232.3	Adjusted Chi Square Value (269.29, β)	232
95% Gamma Approximate UCL (use when $n \geq 50$)	180.2	95% Gamma Adjusted UCL (use when $n < 50$)	180.3
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.101	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0631	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	155.7	Mean in Log Scale	4.383
SD in Original Scale	272	SD in Log Scale	1.225
95% t UCL (assumes normality of ROS data)	187.1	95% Percentile Bootstrap UCL	190.5
95% BCA Bootstrap UCL	205	95% Bootstrap t UCL	210.1
95% H-UCL (Log ROS)	207.3		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	155.5	Mean in Log Scale	4.353
SD in Original Scale	272.1	SD in Log Scale	1.293
95% t UCL (Assumes normality)	186.9	95% H-Stat UCL	223
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	238.5		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***c5-c8 aliphatics adjusted***aliphatic05-08a***t***mg/kg)			
General Statistics			
Total Number of Observations	205	Number of Distinct Observations	160
Number of Detects	4	Number of Non-Detects	201
Number of Distinct Detects	4	Number of Distinct Non-Detects	159
Minimum Detect	14.3	Minimum Non-Detect	4.86
Maximum Detect	23.6	Maximum Non-Detect	72.3
Variance Detects	16.46	Percent Non-Detects	98.05%
Mean Detects	18.95	SD Detects	4.057
Median Detects	18.95	CV Detects	0.214
Skewness Detects	2.27E-15	Kurtosis Detects	-176.00%
Mean of Logged Detects	2.924	SD of Logged Detects	0.219
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.986	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	1.67E-01	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.633	Standard Error of Mean	0.443
SD	3.132	95% KM (BCA) UCL	N/A
95% KM (t) UCL	6.365	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	6.361	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	6.961	95% KM Chebyshev UCL	7.562
97.5% KM Chebyshev UCL	8.397	99% KM Chebyshev UCL	10.04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.217	Anderson-Darling GOF Test	
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.206	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	28.47	k star (bias corrected MLE)	7.284
Theta hat (MLE)	0.666	Theta star (bias corrected MLE)	2.602
nu hat (MLE)	227.7	nu star (bias corrected)	58.27
MLE Mean (bias corrected)	18.95	MLE Sd (bias corrected)	7.022
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.236	nu hat (KM)	1327
Approximate Chi Square Value (N/A, α)	1243	Adjusted Chi Square Value (N/A, β)	1243
95% Gamma Approximate KM-UCL (use when n>=50)	6.012	95% Gamma Adjusted KM-UCL (use when n<50)	6.015
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.701
Maximum	23.6	Median	0.99
SD	2.898	CV	1.703
k hat (MLE)	0.576	k star (bias corrected MLE)	0.571
Theta hat (MLE)	2.952	Theta star (bias corrected MLE)	2.979
nu hat (MLE)	236.3	nu star (bias corrected)	234.2
MLE Mean (bias corrected)	1.701	MLE Sd (bias corrected)	2.251
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (234.18, α)	199.8	Adjusted Chi Square Value (234.18, β)	199.5
95% Gamma Approximate UCL (use when n>=50)	1.995	95% Gamma Adjusted UCL (use when n<50)	N/A
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.983	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.186	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6.578	Mean in Log Scale	1.856
SD in Original Scale	2.036	SD in Log Scale	0.211
95% t UCL (assumes normality of ROS data)	6.813	95% Percentile Bootstrap UCL	6.83
95% BCA Bootstrap UCL	6.886	95% Bootstrap t UCL	6.931
95% H-UCL (Log ROS)	6.709		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	1.659	95% H-UCL (KM -Log)	5.71
KM SD (logged)	0.306	95% Critical H Value (KM-Log)	1.718
KM Standard Error of Mean (logged)	0.0455		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	11.82	Mean in Log Scale	2.364
SD in Original Scale	5.493	SD in Log Scale	0.476
95% t UCL (Assumes normality)	12.45	95% H-Stat UCL	12.65
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	6.365	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***c5-c8 aliphatics adjusted***aliphatic05-08a***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	205	Number of Distinct Observations	202
Number of Detects	4	Number of Non-Detects	201
Number of Distinct Detects	4	Number of Distinct Non-Detects	199
Minimum Detect	1.536	Minimum Non-Detect	0.921
Maximum Detect	1.938	Maximum Non-Detect	24.12
Variance Detects	0.0275	Percent Non-Detects	98.05%
Mean Detects	1.731	SD Detects	0.166
Median Detects	1.726	CV Detects	0.0957
Skewness Detects	0.189	Kurtosis Detects	0.962

Mean of Logged Detects	0.546	SD of Logged Detects	0.0958
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.989	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.997	Standard Error of Mean	0.0423
SD	0.235	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.067	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.067	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.124	95% KM Chebyshev UCL	1.182
97.5% KM Chebyshev UCL	1.261	99% KM Chebyshev UCL	1.418
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.218	Anderson-Darling GOF Test	
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.177	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	145.7	k star (bias corrected MLE)	36.58
Theta hat (MLE)	0.0119	Theta star (bias corrected MLE)	0.0473
nu hat (MLE)	1165	nu star (bias corrected)	292.7
MLE Mean (bias corrected)	1.731	MLE Sd (bias corrected)	0.286
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	18.06	nu hat (KM)	7406
Approximate Chi Square Value (N/A, α)	7207	Adjusted Chi Square Value (N/A, β)	7205
95% Gamma Approximate KM-UCL (use when n>=50)	1.025	95% Gamma Adjusted KM-UCL (use when n<50)	1.025
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.882	Mean	1.057
Maximum	1.938	Median	1.051
SD	0.101	CV	0.0953
k hat (MLE)	153.3	k star (bias corrected MLE)	151
Theta hat (MLE)	0.0069	Theta star (bias corrected MLE)	0.007
nu hat (MLE)	62842	nu star (bias corrected)	61924
MLE Mean (bias corrected)	1.057	MLE Sd (bias corrected)	0.086
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (N/A, α)	61346	Adjusted Chi Square Value (N/A, β)	61342
95% Gamma Approximate UCL (use when n>=50)	1.067	95% Gamma Adjusted UCL (use when n<50)	N/A
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.991	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.183	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.15	Mean in Log Scale	0.137
SD in Original Scale	0.0866	SD in Log Scale	0.061
95% t UCL (assumes normality of ROS data)	1.16	95% Percentile Bootstrap UCL	1.16
95% BCA Bootstrap UCL	1.163	95% Bootstrap t UCL	1.169
95% H-UCL (Log ROS)	N/A		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.0225	95% H-UCL (KM -Log)	1.016
KM SD (logged)	0.182	95% Critical H Value (KM-Log)	1.681
KM Standard Error of Mean (logged)	0.0333		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.658	Mean in Log Scale	0.354
SD in Original Scale	1.112	SD in Log Scale	0.537
95% t UCL (Assumes normality)	1.786	95% H-Stat UCL	1.761
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			

95% KM (t) UCL	1.067	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***c5-c8 aliphatics unadjusted***aliphatic05-08u***t***mg/kg)			
General Statistics			
Total Number of Observations	205	Number of Distinct Observations	160
Number of Detects	4	Number of Non-Detects	201
Number of Distinct Detects	4	Number of Distinct Non-Detects	159
Minimum Detect	14.3	Minimum Non-Detect	4.86
Maximum Detect	2.36E+01	Maximum Non-Detect	7230.00%
Variance Detects	16.46	Percent Non-Detects	98.05%
Mean Detects	18.95	SD Detects	4.057
Median Detects	18.95	CV Detects	0.214
Skewness Detects	2.27E-15	Kurtosis Detects	-1.76
Mean of Logged Detects	2.924	SD of Logged Detects	0.219
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.986	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.167	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.633	Standard Error of Mean	0.443
SD	3.132	95% KM (BCA) UCL	N/A
95% KM (t) UCL	6.365	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	6.361	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	6.961	95% KM Chebyshev UCL	7.562
97.5% KM Chebyshev UCL	8.397	99% KM Chebyshev UCL	10.04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.217	Anderson-Darling GOF Test	
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.206	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	28.47	k star (bias corrected MLE)	7.284
Theta hat (MLE)	0.666	Theta star (bias corrected MLE)	2.602
nu hat (MLE)	227.7	nu star (bias corrected)	58.27
MLE Mean (bias corrected)	18.95	MLE Sd (bias corrected)	7.022
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.236	nu hat (KM)	1327
Approximate Chi Square Value (N/A, α)	1243	Adjusted Chi Square Value (N/A, β)	1243
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.012	95% Gamma Adjusted KM-UCL (use when $n < 50$)	6.015
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.701
Maximum	23.6	Median	0.99
SD	2.898	CV	1.703
k hat (MLE)	0.576	k star (bias corrected MLE)	0.571
Theta hat (MLE)	2.952	Theta star (bias corrected MLE)	2.979
nu hat (MLE)	236.3	nu star (bias corrected)	234.2
MLE Mean (bias corrected)	1.701	MLE Sd (bias corrected)	2.251
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (234.18, α)	199.8	Adjusted Chi Square Value (234.18, β)	199.5
95% Gamma Approximate UCL (use when $n \geq 50$)	1.995	95% Gamma Adjusted UCL (use when $n < 50$)	N/A
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.983	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.186	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6.578	Mean in Log Scale	1.856
SD in Original Scale	2.036	SD in Log Scale	0.211

95% t UCL (assumes normality of ROS data)	6.813	95% Percentile Bootstrap UCL	6.817
95% BCA Bootstrap UCL	6.903	95% Bootstrap t UCL	6.916
95% H-UCL (Log ROS)	6.709		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	1.659	95% H-UCL (KM -Log)	5.71
KM SD (logged)	0.306	95% Critical H Value (KM-Log)	1.718
KM Standard Error of Mean (logged)	0.0455		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	11.82	Mean in Log Scale	2.364
SD in Original Scale	5.493	SD in Log Scale	0.476
95% t UCL (Assumes normality)	12.45	95% H-Stat UCL	12.65
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	6.365	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***c5-c8 aliphatics unadjusted***aliphatic05-08u***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	205	Number of Distinct Observations	202
Number of Detects	4	Number of Non-Detects	201
Number of Distinct Detects	4	Number of Distinct Non-Detects	199
Minimum Detect	1.536	Minimum Non-Detect	0.921
Maximum Detect	1.938	Maximum Non-Detect	24.12
Variance Detects	0.0275	Percent Non-Detects	98.05%
Mean Detects	1.731	SD Detects	0.166
Median Detects	1.726	CV Detects	0.0957
Skewness Detects	0.189	Kurtosis Detects	0.962
Mean of Logged Detects	0.546	SD of Logged Detects	0.0958
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.989	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.997	Standard Error of Mean	0.0423
SD	0.235	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.067	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.067	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.124	95% KM Chebyshev UCL	1.182
97.5% KM Chebyshev UCL	1.261	99% KM Chebyshev UCL	1.418
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.218	Anderson-Darling GOF Test	
5% A-D Critical Value	0.657	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.177	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.394	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	145.7	k star (bias corrected MLE)	36.58
Theta hat (MLE)	0.0119	Theta star (bias corrected MLE)	0.0473
nu hat (MLE)	1165	nu star (bias corrected)	292.7
MLE Mean (bias corrected)	1.731	MLE Sd (bias corrected)	0.286
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	18.06	nu hat (KM)	7406
Approximate Chi Square Value (N/A, α)	7207	Adjusted Chi Square Value (N/A, β)	7205
95% Gamma Approximate KM-UCL (use when n>=50)	1.025	95% Gamma Adjusted KM-UCL (use when n<50)	1.025
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.882	Mean	1.057

Maximum	1.938	Median	1.051
SD	0.101	CV	0.0953
k hat (MLE)	153.3	k star (bias corrected MLE)	151
Theta hat (MLE)	0.0069	Theta star (bias corrected MLE)	0.007
nu hat (MLE)	62842	nu star (bias corrected)	61924
MLE Mean (bias corrected)	1.057	MLE Sd (bias corrected)	0.086
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (N/A, α)	61346	Adjusted Chi Square Value (N/A, β)	61342
95% Gamma Approximate UCL (use when n>=50)	1.067	95% Gamma Adjusted UCL (use when n<50)	N/A
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.991	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.183	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.15	Mean in Log Scale	0.137
SD in Original Scale	0.0866	SD in Log Scale	0.061
95% t UCL (assumes normality of ROS data)	1.16	95% Percentile Bootstrap UCL	1.16
95% BCA Bootstrap UCL	1.163	95% Bootstrap t UCL	1.168
95% H-UCL (Log ROS)	N/A		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.0225	95% H-UCL (KM -Log)	1.016
KM SD (logged)	0.182	95% Critical H Value (KM-Log)	1.681
KM Standard Error of Mean (logged)	0.0333		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.658	Mean in Log Scale	0.354
SD in Original Scale	1.112	SD in Log Scale	0.537
95% t UCL (Assumes normality)	1.786	95% H-Stat UCL	1.761
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.067	95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***c9-c10 aromatics unadjusted***aromatic09-10u***t***mg/kg)			
General Statistics			
Total Number of Observations	205	Number of Distinct Observations	166
Number of Detects	45	Number of Non-Detects	160
Number of Distinct Detects	43	Number of Distinct Non-Detects	131
Minimum Detect	6.5	Minimum Non-Detect	4.86
Maximum Detect	576	Maximum Non-Detect	72.3
Variance Detects	10376	Percent Non-Detects	78.05%
Mean Detects	74.64	SD Detects	101.9
Median Detects	43.9	CV Detects	1.365
Skewness Detects	3.639	Kurtosis Detects	14.87
Mean of Logged Detects	3.846	SD of Logged Detects	0.908
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.565	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.945	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.275	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	21.98	Standard Error of Mean	3.926
SD	55	95% KM (BCA) UCL	29.55
95% KM (t) UCL	28.47	95% KM (Percentile Bootstrap) UCL	29.03
95% KM (z) UCL	28.44	95% KM Bootstrap t UCL	32.84
90% KM Chebyshev UCL	33.76	95% KM Chebyshev UCL	39.09
97.5% KM Chebyshev UCL	46.5	99% KM Chebyshev UCL	61.04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.596	Anderson-Darling GOF Test	
5% A-D Critical Value	0.773	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.153	Kolmogrov-Smirnoff GOF	

5% K-S Critical Value	0.135	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.212	k star (bias corrected MLE)	114.60%
Theta hat (MLE)	61.57	Theta star (bias corrected MLE)	65.12
nu hat (MLE)	109.1	nu star (bias corrected)	103.2
MLE Mean (bias corrected)	74.64	MLE Sd (bias corrected)	69.72
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.16	nu hat (KM)	65.49
Approximate Chi Square Value (65.49, α)	47.87	Adjusted Chi Square Value (65.49, β)	47.76
95% Gamma Approximate KM-UCL (use when n>=50)	30.07	95% Gamma Adjusted KM-UCL (use when n<50)	30.14
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	16.39
Maximum	576	Median	0.01
SD	56.54	CV	3.449
k hat (MLE)	0.14	k star (bias corrected MLE)	0.141
Theta hat (MLE)	117.1	Theta star (bias corrected MLE)	116.1
nu hat (MLE)	57.38	nu star (bias corrected)	57.87
MLE Mean (bias corrected)	16.39	MLE Sd (bias corrected)	43.63
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (57.87, α)	41.39	Adjusted Chi Square Value (57.87, β)	41.29
95% Gamma Approximate UCL (use when n>=50)	22.92	95% Gamma Adjusted UCL (use when n<50)	22.98
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.976	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.945	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0765	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.132	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	19.12	Mean in Log Scale	1.76
SD in Original Scale	55.77	SD in Log Scale	1.242
95% t UCL (assumes normality of ROS data)	25.56	95% Percentile Bootstrap UCL	26.28
95% BCA Bootstrap UCL	29.04	95% Bootstrap t UCL	30.15
95% H-UCL (Log ROS)	15.43		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	2.282	95% H-UCL (KM -Log)	19.02
KM SD (logged)	1.011	95% Critical H Value (KM-Log)	2.153
KM Standard Error of Mean (logged)	0.0972		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	25.5	Mean in Log Scale	2.681
SD in Original Scale	54.26	SD in Log Scale	0.859
95% t UCL (Assumes normality)	31.77	95% H-Stat UCL	23.86
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	28.47	95% KM (% Bootstrap) UCL	29.03
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***c9-c10 aromatics unadjusted***aromatic09-10u***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	2.05E+02	Number of Distinct Observations	202
Number of Detects	45	Number of Non-Detects	160
Number of Distinct Detects	45	Number of Distinct Non-Detects	159
Minimum Detect	1.136	Minimum Non-Detect	1.008
Maximum Detect	59.75	Maximum Non-Detect	24.12
Variance Detects	83.1	Percent Non-Detects	78.05%
Mean Detects	6.479	SD Detects	9.116
Median Detects	3.996	CV Detects	1.407
Skewness Detects	4.853	Kurtosis Detects	27.45
Mean of Logged Detects	1.474	SD of Logged Detects	0.798

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.496	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.945	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.279	Lilliefors GOF Test
5% Lilliefors Critical Value	0.132	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2.489	Standard Error of Mean 0.342
SD	4.766	95% KM (BCA) UCL 3.113
95% KM (t) UCL	3.055	95% KM (Percentile Bootstrap) UCL 3.129
95% KM (z) UCL	3.053	95% KM Bootstrap t UCL 3.508
90% KM Chebyshev UCL	3.517	95% KM Chebyshev UCL 3.982
97.5% KM Chebyshev UCL	4.628	99% KM Chebyshev UCL 5.896
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.624	Anderson-Darling GOF Test
5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.164	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.134	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.41	k star (bias corrected MLE) 1.331
Theta hat (MLE)	4.596	Theta star (bias corrected MLE) 4.869
nu hat (MLE)	126.9	nu star (bias corrected) 119.8
MLE Mean (bias corrected)	6.479	MLE Sd (bias corrected) 5.617
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.273	nu hat (KM) 111.8
Approximate Chi Square Value (111.83, α)	88.42	Adjusted Chi Square Value (111.83, β) 88.27
95% Gamma Approximate KM-UCL (use when n>=50)	3.148	95% Gamma Adjusted KM-UCL (use when n<50) 3.154
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 1.43
Maximum	59.75	Median 0.01
SD	5.013	CV 3.505
k hat (MLE)	0.202	k star (bias corrected MLE) 0.203
Theta hat (MLE)	7.065	Theta star (bias corrected MLE) 7.055
nu hat (MLE)	83	nu star (bias corrected) 83.12
MLE Mean (bias corrected)	1.43	MLE Sd (bias corrected) 3.176
		Adjusted Level of Significance (β) 0.0488
Approximate Chi Square Value (83.12, α)	63.11	Adjusted Chi Square Value (83.12, β) 62.98
95% Gamma Approximate UCL (use when n>=50)	1.884	95% Gamma Adjusted UCL (use when n<50) 1.887
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.96	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.945	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.112	Lilliefors GOF Test
5% Lilliefors Critical Value	0.132	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.967	Mean in Log Scale 0.0256
SD in Original Scale	4.868	SD in Log Scale 0.876
95% t UCL (assumes normality of ROS data)	2.528	95% Percentile Bootstrap UCL 2.606
95% BCA Bootstrap UCL	2.854	95% Bootstrap t UCL 3.052
95% H-UCL (Log ROS)	1.707	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	0.505	95% H-UCL (KM -Log) 2.34
KM SD (logged)	0.706	95% Critical H Value (KM-Log) 1.924
KM Standard Error of Mean (logged)	0.0625	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	2.835	Mean in Log Scale 0.67
SD in Original Scale	4.774	SD in Log Scale 0.737
95% t UCL (Assumes normality)	3.386	95% H-Stat UCL 2.835
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	3.055	95% KM (% Bootstrap) UCL 3.129

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***c9-c12 aliphatics adjusted***aliphatic09-12a***t***mg/kg)

General Statistics		
Total Number of Observations	205	Number of Distinct Observations 169
Number of Detects	80	Number of Non-Detects 125
Number of Distinct Detects	77	Number of Distinct Non-Detects 107
Minimum Detect	4.9	Minimum Non-Detect 5.28
Maximum Detect	93.5	Maximum Non-Detect 53.2
Variance Detects	414.7	Percent Non-Detects 60.98%
Mean Detects	40.36	SD Detects 20.36
Median Detects	39.1	CV Detects 0.505
Skewness Detects	0.408	Kurtosis Detects -0.564
Mean of Logged Detects	3.542	SD of Logged Detects 0.614
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.954	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0.0184	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.131	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0991	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	20.85	Standard Error of Mean 1.516
SD	20.49	95% KM (BCA) UCL 23.49
95% KM (t) UCL	23.36	95% KM (Percentile Bootstrap) UCL 23.52
95% KM (z) UCL	23.35	95% KM Bootstrap t UCL 23.45
90% KM Chebyshev UCL	25.4	95% KM Chebyshev UCL 27.46
97.5% KM Chebyshev UCL	30.32	99% KM Chebyshev UCL 35.94
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.599	Anderson-Darling GOF Test
5% A-D Critical Value	0.758	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0685	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.1	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.362	k star (bias corrected MLE) 3.244
Theta hat (MLE)	12.01	Theta star (bias corrected MLE) 12.44
nu hat (MLE)	537.9	nu star (bias corrected) 519
MLE Mean (bias corrected)	40.36	MLE Sd (bias corrected) 22.41
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.035	nu hat (KM) 424.5
Approximate Chi Square Value (424.46, α)	377.7	Adjusted Chi Square Value (424.46, β) 377.4
95% Gamma Approximate KM-UCL (use when n>=50)	23.43	95% Gamma Adjusted KM-UCL (use when n<50) 23.45
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 19.02
Maximum	93.5	Median 7.679
SD	21.46	CV 1.128
k hat (MLE)	0.582	k star (bias corrected MLE) 0.577
Theta hat (MLE)	32.69	Theta star (bias corrected MLE) 32.99
nu hat (MLE)	238.6	nu star (bias corrected) 236.4
MLE Mean (bias corrected)	19.02	MLE Sd (bias corrected) 25.05
		Adjusted Level of Significance (β) 0.0488
Approximate Chi Square Value (236.43, α)	201.8	Adjusted Chi Square Value (236.43, β) 201.6
95% Gamma Approximate UCL (use when n>=50)	22.28	95% Gamma Adjusted UCL (use when n<50) 22.31
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.103	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0991	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	21.75	Mean in Log Scale 2.764
SD in Original Scale	19.64	SD in Log Scale 0.749
95% t UCL (assumes normality of ROS data)	24.02	95% Percentile Bootstrap UCL 23.95
95% BCA Bootstrap UCL	24.04	95% Bootstrap t UCL 24.3
95% H-UCL (Log ROS)	23.26	
DL/2 Statistics		

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	22.18	Mean in Log Scale	2.771
SD in Original Scale	19.59	SD in Log Scale	0.792
95% t UCL (Assumes normality)	24.44	95% H-Stat UCL	24.41
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	23.36	95% GROS Approximate Gamma UCL	22.28
95% Approximate Gamma KM-UCL	23.43		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***c9-c12 aliphatics adjusted***aliphatic09-12a***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	205	Number of Distinct Observations	204
Number of Detects	80	Number of Non-Detects	125
Number of Distinct Detects	80	Number of Distinct Non-Detects	124
Minimum Detect	0.956	Minimum Non-Detect	1.034
Maximum Detect	14.3	Maximum Non-Detect	24.12
Variance Detects	8.235	Percent Non-Detects	60.98%
Mean Detects	4.335	SD Detects	2.87
Median Detects	3.551	CV Detects	0.662
Skewness Detects	1.845	Kurtosis Detects	3.725
Mean of Logged Detects	1.292	SD of Logged Detects	0.583
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.809	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	1.09E-14	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.175	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0991	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.645	Standard Error of Mean	0.176
SD	2.353	95% KM (BCA) UCL	2.987
95% KM (t) UCL	2.936	95% KM (Percentile Bootstrap) UCL	2.939
95% KM (z) UCL	2.934	95% KM Bootstrap t UCL	2.962
90% KM Chebyshev UCL	3.172	95% KM Chebyshev UCL	3.411
97.5% KM Chebyshev UCL	3.742	99% KM Chebyshev UCL	4.393
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.988	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.102	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.1	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.014	k star (bias corrected MLE)	2.909
Theta hat (MLE)	1.439	Theta star (bias corrected MLE)	1.49
nu hat (MLE)	482.2	nu star (bias corrected)	465.4
MLE Mean (bias corrected)	4.335	MLE Sd (bias corrected)	2.542
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.264	nu hat (KM)	518.2
Approximate Chi Square Value (518.21, α)	466.4	Adjusted Chi Square Value (518.21, β)	466.1
95% Gamma Approximate KM-UCL (use when n>=50)	2.939	95% Gamma Adjusted KM-UCL (use when n<50)	2.941
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	2.027
Maximum	14.3	Median	1.089
SD	2.598	CV	1.282
k hat (MLE)	0.526	k star (bias corrected MLE)	0.522
Theta hat (MLE)	3.853	Theta star (bias corrected MLE)	3.886
nu hat (MLE)	215.6	nu star (bias corrected)	213.8
MLE Mean (bias corrected)	2.027	MLE Sd (bias corrected)	2.806
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (213.82, α)	181	Adjusted Chi Square Value (213.82, β)	180.8
95% Gamma Approximate UCL (use when n>=50)	2.394	95% Gamma Adjusted UCL (use when n<50)	2.397

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0598	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0991	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.534	Mean in Log Scale	0.685
SD in Original Scale	2.309	SD in Log Scale	0.635
95% t UCL (assumes normality of ROS data)	2.8	95% Percentile Bootstrap UCL	2.811
95% BCA Bootstrap UCL	2.825	95% Bootstrap t UCL	2.843
95% H-UCL (Log ROS)	2.637		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	0.7	95% H-UCL (KM -Log)	2.822
KM SD (logged)	0.698	95% Critical H Value (KM-Log)	1.918
KM Standard Error of Mean (logged)	0.0592		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2.788	Mean in Log Scale	0.76
SD in Original Scale	2.391	SD in Log Scale	0.712
95% t UCL (Assumes normality)	3.064	95% H-Stat UCL	3.035
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	2.936	95% KM (% Bootstrap) UCL	2.939
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***c9-c12 aliphatics unadjusted***aliphatic09-12u***t***mg/kg)			
General Statistics			
Total Number of Observations	205	Number of Distinct Observations	174
Number of Detects	102	Number of Non-Detects	103
Number of Distinct Detects	99	Number of Distinct Non-Detects	89
Minimum Detect	4.9	Minimum Non-Detect	5.28
Maximum Detect	460	Maximum Non-Detect	46.3
Variance Detects	3275	Percent Non-Detects	50.24%
Mean Detects	59.36	SD Detects	57.22
Median Detects	42.5	CV Detects	96.40%
Skewness Detects	4.301	Kurtosis Detects	25.59
Mean of Logged Detects	3.808	SD of Logged Detects	0.736
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.645	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0877	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	33.81	Standard Error of Mean	3.377
SD	47.69	95% KM (BCA) UCL	39.41
95% KM (t) UCL	39.39	95% KM (Percentile Bootstrap) UCL	39.53
95% KM (z) UCL	39.37	95% KM Bootstrap t UCL	41.03
90% KM Chebyshev UCL	43.94	95% KM Chebyshev UCL	48.53
97.5% KM Chebyshev UCL	54.9	99% KM Chebyshev UCL	67.42
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.124	Anderson-Darling GOF Test	
5% A-D Critical Value	0.765	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0894	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0901	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.967	k star (bias corrected MLE)	1.916
Theta hat (MLE)	30.17	Theta star (bias corrected MLE)	30.98
nu hat (MLE)	401.3	nu star (bias corrected)	#####
MLE Mean (bias corrected)	59.36	MLE Sd (bias corrected)	42.88
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.503	nu hat (KM)	206
Approximate Chi Square Value (206.04, α)	173.8	Adjusted Chi Square Value (206.04, β)	173.6
95% Gamma Approximate KM-UCL (use when n>=50)	40.08	95% Gamma Adjusted KM-UCL (use when n<50)	40.12

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 29.54
Maximum	460	Median 0.01
SD	50.06	CV 1.695
k hat (MLE)	0.194	k star (bias corrected MLE) 0.195
Theta hat (MLE)	152	Theta star (bias corrected MLE) 151.7
nu hat (MLE)	79.66	nu star (bias corrected) 79.83
MLE Mean (bias corrected)	29.54	MLE Sd (bias corrected) 66.94
		Adjusted Level of Significance (β) 0.0488
Approximate Chi Square Value (79.83, α)	60.24	Adjusted Chi Square Value (79.83, β) 60.12
95% Gamma Approximate UCL (use when n>=50)	39.14	95% Gamma Adjusted UCL (use when n<50) 39.22
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0734	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0877	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	34.39	Mean in Log Scale 3.022
SD in Original Scale	47.37	SD in Log Scale 0.954
95% t UCL (assumes normality of ROS data)	39.86	95% Percentile Bootstrap UCL 40.25
95% BCA Bootstrap UCL	42.02	95% Bootstrap t UCL 41.85
95% H-UCL (Log ROS)	37.26	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	2.897	95% H-UCL (KM -Log) 39.56
KM SD (logged)	1.103	95% Critical H Value (KM-Log) 2.232
KM Standard Error of Mean (logged)	0.0937	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	34.71	Mean in Log Scale 3.03
SD in Original Scale	47.26	SD in Log Scale 0.975
95% t UCL (Assumes normality)	40.17	95% H-Stat UCL 38.47
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	39.39	95% GROS Approximate Gamma UCL 39.14
95% Approximate Gamma KM-UCL	40.08	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***c9-c12 aliphatics unadjusted***aliphatic09-12u***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	205	Number of Distinct Observations 204
Number of Detects	102	Number of Non-Detects 103
Number of Distinct Detects	102	Number of Distinct Non-Detects 102
Minimum Detect	1.136	Minimum Non-Detect 1.034
Maximum Detect	25.99	Maximum Non-Detect 24.12
Variance Detects	17.95	Percent Non-Detects 50.24%
Mean Detects	5.726	SD Detects 4.237
Median Detects	4.111	CV Detects 0.74
Skewness Detects	1.909	Kurtosis Detects 491.50%
Mean of Logged Detects	1.524	SD of Logged Detects 0.654
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.822	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.176	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0877	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	3.786	Standard Error of Mean 0.261
SD	3.625	95% KM (BCA) UCL 4.247
95% KM (t) UCL	4.217	95% KM (Percentile Bootstrap) UCL 4.226
95% KM (z) UCL	4.215	95% KM Bootstrap t UCL 4.294
90% KM Chebyshev UCL	4.569	95% KM Chebyshev UCL 4.924
97.5% KM Chebyshev UCL	5.417	99% KM Chebyshev UCL 6.384

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.551	Anderson-Darling GOF Test
5% A-D Critical Value	0.762	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.119	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0899	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	2.417	k star (bias corrected MLE) 2.353
Theta hat (MLE)	2.368	Theta star (bias corrected MLE) 2.433
nu hat (MLE)	493.1	nu star (bias corrected) 480
MLE Mean (bias corrected)	5.726	MLE Sd (bias corrected) 3.733
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.091	nu hat (KM) 447.2
Approximate Chi Square Value (447.16, α)	399.1	Adjusted Chi Square Value (447.16, β) 398.8
95% Gamma Approximate KM-UCL (use when n>=50)	4.242	95% Gamma Adjusted KM-UCL (use when n<50) 4.245
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 3.17
Maximum	25.99	Median 1.637
SD	3.944	CV 1.244
k hat (MLE)	0.512	k star (bias corrected MLE) 0.508
Theta hat (MLE)	6.194	Theta star (bias corrected MLE) 6.246
nu hat (MLE)	209.9	nu star (bias corrected) 208.1
MLE Mean (bias corrected)	3.17	MLE Sd (bias corrected) 4.45
		Adjusted Level of Significance (β) 0.0488
Approximate Chi Square Value (208.12, α)	175.7	Adjusted Chi Square Value (208.12, β) 175.5
95% Gamma Approximate UCL (use when n>=50)	3.755	95% Gamma Adjusted UCL (use when n<50) 3.759
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0799	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0877	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3.687	Mean in Log Scale 0.995
SD in Original Scale	3.622	SD in Log Scale 0.732
95% t UCL (assumes normality of ROS data)	4.105	95% Percentile Bootstrap UCL 4.147
95% BCA Bootstrap UCL	4.195	95% Bootstrap t UCL 4.157
95% H-UCL (Log ROS)	3.904	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	1.008	95% H-UCL (KM -Log) 4.092
KM SD (logged)	0.769	95% Critical H Value (KM-Log) 1.966
KM Standard Error of Mean (logged)	0.0614	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	3.837	Mean in Log Scale 1.02
SD in Original Scale	3.651	SD in Log Scale 0.787
95% t UCL (Assumes normality)	4.258	95% H-Stat UCL 4.214
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	4.217	95% KM (% Bootstrap) UCL 4.226
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***c9-c18 aliphatics unadjusted***aliphatic09-18u***t***mg/kg)		
General Statistics		
Total Number of Observations	205	Number of Distinct Observations 187
Number of Detects	161	Number of Non-Detects 44
Number of Distinct Detects	148	Number of Distinct Non-Detects 39
Minimum Detect	13.8	Minimum Non-Detect 8.65
Maximum Detect	6100	Maximum Non-Detect #####
Variance Detects	615956	Percent Non-Detects 21.46%
Mean Detects	357.7	SD Detects 784.8
Median Detects	142	CV Detects 2.194

Skewness Detects	5.62	Kurtosis Detects	36.03
Mean of Logged Detects	5.03	SD of Logged Detects	1.194
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	4.09E-01	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.331	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0698	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	284.6	Standard Error of Mean	49.57
SD	707.4	95% KM (BCA) UCL	370.1
95% KM (t) UCL	366.5	95% KM (Percentile Bootstrap) UCL	375.8
95% KM (z) UCL	366.1	95% KM Bootstrap t UCL	414.6
90% KM Chebyshev UCL	433.3	95% KM Chebyshev UCL	500.7
97.5% KM Chebyshev UCL	594.2	99% KM Chebyshev UCL	777.8
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.655	Anderson-Darling GOF Test	
5% A-D Critical Value	0.8	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.157	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0768	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.71	k star (bias corrected MLE)	0.701
Theta hat (MLE)	503.8	Theta star (bias corrected MLE)	510.4
nu hat (MLE)	228.6	nu star (bias corrected)	225.7
MLE Mean (bias corrected)	357.7	MLE Sd (bias corrected)	427.3
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.162	nu hat (KM)	66.36
Approximate Chi Square Value (66.36, α)	48.62	Adjusted Chi Square Value (66.36, β)	48.51
95% Gamma Approximate KM-UCL (use when n>=50)	388.5	95% Gamma Adjusted KM-UCL (use when n<50)	389.4
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	280.9
Maximum	6100	Median	101
SD	710.5	CV	2.529
k hat (MLE)	0.263	k star (bias corrected MLE)	0.263
Theta hat (MLE)	1067	Theta star (bias corrected MLE)	1070
nu hat (MLE)	107.9	nu star (bias corrected)	107.7
MLE Mean (bias corrected)	280.9	MLE Sd (bias corrected)	548.2
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (107.68, α)	84.73	Adjusted Chi Square Value (107.68, β)	84.58
95% Gamma Approximate UCL (use when n>=50)	357	95% Gamma Adjusted UCL (use when n<50)	357.6
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0461	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0698	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	284.3	Mean in Log Scale	4.514
SD in Original Scale	709.2	SD in Log Scale	1.464
95% t UCL (assumes normality of ROS data)	366.2	95% Percentile Bootstrap UCL	372.7
95% BCA Bootstrap UCL	405.7	95% Bootstrap t UCL	405.4
95% H-UCL (Log ROS)	347.2		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.495	95% H-UCL (KM -Log)	358.8
KM SD (logged)	1.494	95% Critical H Value (KM-Log)	2.604
KM Standard Error of Mean (logged)	0.108		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	285.1	Mean in Log Scale	4.48
SD in Original Scale	709	SD in Log Scale	1.533
95% t UCL (Assumes normality)	366.9	95% H-Stat UCL	379.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	500.7		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***c9-c18 aliphatics unadjusted***aliphatic09-18u***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	205	Number of Distinct Observations 204
Number of Detects	161	Number of Non-Detects 44
Number of Distinct Detects	160	Number of Distinct Non-Detects 44
Minimum Detect	2.307	Minimum Non-Detect 1.957
Maximum Detect	632.8	Maximum Non-Detect 3922.00%
Variance Detects	5054	Percent Non-Detects 21.46%
Mean Detects	34.02	SD Detects 71.09
Median Detects	15.67	CV Detects 2.089
Skewness Detects	6.106	Kurtosis Detects 43.75
Mean of Logged Detects	2.839	SD of Logged Detects 1.033
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.406	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.328	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0698	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	27.58	Standard Error of Mean 4.487
SD	64.03	95% KM (BCA) UCL 35.99
95% KM (t) UCL	34.99	95% KM (Percentile Bootstrap) UCL 35.6
95% KM (z) UCL	34.96	95% KM Bootstrap t UCL 40.1
90% KM Chebyshev UCL	41.04	95% KM Chebyshev UCL 47.14
97.5% KM Chebyshev UCL	55.6	99% KM Chebyshev UCL 72.22
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	7.75	Anderson-Darling GOF Test
5% A-D Critical Value	0.791	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.176	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0763	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.855	k star (bias corrected MLE) 0.843
Theta hat (MLE)	39.81	Theta star (bias corrected MLE) 40.37
nu hat (MLE)	275.2	nu star (bias corrected) 271.4
MLE Mean (bias corrected)	34.02	MLE Sd (bias corrected) 37.06
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.186	nu hat (KM) 76.07
Approximate Chi Square Value (76.07, α)	56.98	Adjusted Chi Square Value (76.07, β) 56.86
95% Gamma Approximate KM-UCL (use when n>=50)	36.82	95% Gamma Adjusted KM-UCL (use when n<50) 36.89
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 26.72
Maximum	632.8	Median 11.86
SD	64.5	CV 2.414
k hat (MLE)	0.332	k star (bias corrected MLE) 0.33
Theta hat (MLE)	80.55	Theta star (bias corrected MLE) 80.94
nu hat (MLE)	136	nu star (bias corrected) 135.4
MLE Mean (bias corrected)	26.72	MLE Sd (bias corrected) 46.51
		Adjusted Level of Significance (β) 0.0488
Approximate Chi Square Value (135.37, α)	109.5	Adjusted Chi Square Value (135.37, β) 109.3
95% Gamma Approximate UCL (use when n>=50)	33.04	95% Gamma Adjusted UCL (use when n<50) 33.09
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0732	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0698	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	27.44	Mean in Log Scale 2.466
SD in Original Scale	64.22	SD in Log Scale 1.179
95% t UCL (assumes normality of ROS data)	34.85	95% Percentile Bootstrap UCL 35.64
95% BCA Bootstrap UCL	38.79	95% Bootstrap t UCL 40.59
95% H-UCL (Log ROS)	28.54	

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	27.58	Mean in Log Scale	2.47
SD in Original Scale	64.19	SD in Log Scale	1.192
95% t UCL (Assumes normality)	34.99	95% H-Stat UCL	29.17
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	47.14		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***cadmium***7440-43-9***t***mg/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	329
		Number of Missing Observations	0
Minimum	0.071	Mean	19.58
Maximum	252	Median	6.42
SD	31.43	Std. Error of Mean	1.643
Coefficient of Variation	1.605	Skewness	3.644
Normal GOF Test			
Shapiro Wilk Test Statistic	0.614	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.267	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	22.29	95% Adjusted-CLT UCL (Chen-1995)	22.62
		95% Modified-t UCL (Johnson-1978)	22.34
Gamma GOF Test			
A-D Test Statistic	8.648	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.809	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.133	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0498	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.632	k star (bias corrected MLE)	0.628
Theta hat (MLE)	31	Theta star (bias corrected MLE)	31.17
nu hat (MLE)	462.4	nu star (bias corrected)	459.9
MLE Mean (bias corrected)	19.58	MLE Sd (bias corrected)	24.7
		Approximate Chi Square Value (0.05)	411.2
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	411
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	21.9	95% Adjusted Gamma UCL (use when n<50)	21.91
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.966	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.83E-05	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0774	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.645	Mean of logged Data	2.004
Maximum of Logged Data	5.529	SD of logged Data	1.454
Assuming Lognormal Distribution			
95% H-UCL	25.9	90% Chebyshev (MVUE) UCL	28.08
95% Chebyshev (MVUE) UCL	31.18	97.5% Chebyshev (MVUE) UCL	35.49
99% Chebyshev (MVUE) UCL	43.95		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	22.29	95% Jackknife UCL	22.29
95% Standard Bootstrap UCL	22.28	95% Bootstrap-t UCL	22.61

95% Hall's Bootstrap UCL	22.85	95% Percentile Bootstrap UCL	22.38
95% BCA Bootstrap UCL	22.6		
90% Chebyshev(Mean, Sd) UCL	24.51	95% Chebyshev(Mean, Sd) UCL	26.74
97.5% Chebyshev(Mean, Sd) UCL	29.84	99% Chebyshev(Mean, Sd) UCL	35.93

Suggested UCL to Use
95% Chebyshev (Mean, Sd) UCL 26.74

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***cadmium***7440-43-9***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
		Number of Missing Observations	0
Minimum	0.0157	Mean	1.923
Maximum	19.83	Median	0.826
SD	2.498	Std. Error of Mean	0.131
Coefficient of Variation	1.299	Skewness	2.735
Normal GOF Test			
Shapiro Wilk Test Statistic	0.7	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.231	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2.138	95% Adjusted-CLT UCL (Chen-1995)	2.158
		95% Modified-t UCL (Johnson-1978)	2.141
Gamma GOF Test			
A-D Test Statistic	8.506	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.791	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	1.27E-01	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0492	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.873	k star (bias corrected MLE)	0.868
Theta hat (MLE)	2.203	Theta star (bias corrected MLE)	2.217
nu hat (MLE)	639	nu star (bias corrected)	635.1
MLE Mean (bias corrected)	1.923	MLE Sd (bias corrected)	2.065
		Approximate Chi Square Value (0.05)	#####
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	577.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	2.114	95% Adjusted Gamma UCL (use when n<50)	2.115
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.972	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.00215	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0643	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-4.157	Mean of logged Data	-0.0184
Maximum of Logged Data	2.987	SD of logged Data	1.185
Assuming Lognormal Distribution			
95% H-UCL	2.282	90% Chebyshev (MVUE) UCL	2.449
95% Chebyshev (MVUE) UCL	2.664	97.5% Chebyshev (MVUE) UCL	2.962
99% Chebyshev (MVUE) UCL	3.548		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2.138	95% Jackknife UCL	2.138
95% Standard Bootstrap UCL	2.145	95% Bootstrap-t UCL	2.154
95% Hall's Bootstrap UCL	2.149	95% Percentile Bootstrap UCL	2.148
95% BCA Bootstrap UCL	2.157		
90% Chebyshev(Mean, Sd) UCL	2.315	95% Chebyshev(Mean, Sd) UCL	2.492
97.5% Chebyshev(Mean, Sd) UCL	2.738	99% Chebyshev(Mean, Sd) UCL	3.222

Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	2.492	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***cadmium-sem***7440-43-9sem***t***umol/g)		
General Statistics		
Total Number of Observations	84	Number of Distinct Observations 84
		Number of Missing Observations 0
Minimum	0.00614	Mean 0.0989
Maximum	0.858	Median 0.0474
SD	0.137	Std. Error of Mean 0.0149
Coefficient of Variation	1.384	Skewness 3.193
Normal GOF Test		
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.249	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0967	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	0.124	95% Adjusted-CLT UCL (Chen-1995) 0.129
		95% Modified-t UCL (Johnson-1978) 0.125
Gamma GOF Test		
A-D Test Statistic	1.516	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.789	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.126	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.101	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	0.842	k star (bias corrected MLE) 0.82
Theta hat (MLE)	0.117	Theta star (bias corrected MLE) 0.121
nu hat (MLE)	141.5	nu star (bias corrected) 137.8
MLE Mean (bias corrected)	0.0989	MLE Sd (bias corrected) 0.109
		Approximate Chi Square Value (0.05) 111.7
Adjusted Level of Significance	0.0471	Adjusted Chi Square Value 111.3
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	0.122	95% Adjusted Gamma UCL (use when n<50) 0.122
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.956	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0.0213	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0897	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0967	Data appear Lognormal at 5% Significance Level
Data appear Approximate Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-5.093	Mean of logged Data -3.014
Maximum of Logged Data	-0.154	SD of logged Data 1.213
Assuming Lognormal Distribution		
95% H-UCL	0.142	90% Chebyshev (MVUE) UCL 0.152
95% Chebyshev (MVUE) UCL	0.175	97.5% Chebyshev (MVUE) UCL 0.207
99% Chebyshev (MVUE) UCL	0.27	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	0.123	95% Jackknife UCL 0.124
95% Standard Bootstrap UCL	0.123	95% Bootstrap-t UCL 0.133
95% Hall's Bootstrap UCL	0.135	95% Percentile Bootstrap UCL 0.127
95% BCA Bootstrap UCL	0.129	
90% Chebyshev(Mean, Sd) UCL	0.144	95% Chebyshev(Mean, Sd) UCL 0.164
97.5% Chebyshev(Mean, Sd) UCL	0.192	99% Chebyshev(Mean, Sd) UCL 0.247
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	0.164	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)		

and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***calcium***7440-70-2***t***mg/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	255
		Number of Missing Observations	0
Minimum	1750	Mean	12700
Maximum	66800	Median	11750
SD	6619	Std. Error of Mean	346
Coefficient of Variation	0.521	Skewness	2.272
Normal GOF Test			
Shapiro Wilk Test Statistic	0.882	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0756	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	13271	95% Adjusted-CLT UCL (Chen-1995)	13313
		95% Modified-t UCL (Johnson-1978)	13278
Gamma GOF Test			
A-D Test Statistic	0.668	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.758	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0336	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.267	k star (bias corrected MLE)	4.234
Theta hat (MLE)	2976	Theta star (bias corrected MLE)	3000
nu hat (MLE)	3124	nu star (bias corrected)	3099
MLE Mean (bias corrected)	12700	MLE Sd (bias corrected)	6172
		Approximate Chi Square Value (0.05)	2971
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2970
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	13249	95% Adjusted Gamma UCL (use when n<50)	13251
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.987	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.736	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0579	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.467	Mean of logged Data	9.328
Maximum of Logged Data	11.11	SD of logged Data	0.503
Assuming Lognormal Distribution			
95% H-UCL	13381	90% Chebyshev (MVUE) UCL	13825
95% Chebyshev (MVUE) UCL	14308	97.5% Chebyshev (MVUE) UCL	14979
99% Chebyshev (MVUE) UCL	16297		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	13269	95% Jackknife UCL	13271
95% Standard Bootstrap UCL	13275	95% Bootstrap-t UCL	13328
95% Hall's Bootstrap UCL	13330	95% Percentile Bootstrap UCL	13315
95% BCA Bootstrap UCL	13326		
90% Chebyshev(Mean, Sd) UCL	13738	95% Chebyshev(Mean, Sd) UCL	14208
97.5% Chebyshev(Mean, Sd) UCL	14861	99% Chebyshev(Mean, Sd) UCL	16143
Suggested UCL to Use			
95% Approximate Gamma UCL	13249		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***calcium***7440-70-2***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
		Number of Missing Observations	0
Minimum	204.3	Mean	1836
Maximum	63619	Median	1519
SD	3410	Std. Error of Mean	178.3
Coefficient of Variation	1.858	Skewness	16.57
Normal GOF Test			
Shapiro Wilk Test Statistic	0.2	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.33	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2130	95% Adjusted-CLT UCL (Chen-1995)	2294
		95% Modified-t UCL (Johnson-1978)	2155
Gamma GOF Test			
A-D Test Statistic	2.73E+28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.763	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.165	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.048	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.555	k star (bias corrected MLE)	2.536
Theta hat (MLE)	718.4	Theta star (bias corrected MLE)	723.8
nu hat (MLE)	1.87E+03	nu star (bias corrected)	1856
MLE Mean (bias corrected)	1836	MLE Sd (bias corrected)	1153
		Approximate Chi Square Value (0.05)	1757
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1757
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1939	95% Adjusted Gamma UCL (use when n<50)	1940
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0899	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	5.319	Mean of logged Data	7.307
Maximum of Logged Data	11.06	SD of logged Data	0.524
Assuming Lognormal Distribution			
95% H-UCL	1796	90% Chebyshev (MVUE) UCL	1858
95% Chebyshev (MVUE) UCL	1926	97.5% Chebyshev (MVUE) UCL	2020
99% Chebyshev (MVUE) UCL	2204		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2129	95% Jackknife UCL	2130
95% Standard Bootstrap UCL	2134	95% Bootstrap-t UCL	2779
95% Hall's Bootstrap UCL	3341	95% Percentile Bootstrap UCL	2174
95% BCA Bootstrap UCL	2357		
90% Chebyshev(Mean, Sd) UCL	2370	95% Chebyshev(Mean, Sd) UCL	2613
97.5% Chebyshev(Mean, Sd) UCL	2949	99% Chebyshev(Mean, Sd) UCL	3609
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	2613		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***caprolactam***105-60-2***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
Number of Detects	16	Number of Non-Detects	350
Number of Distinct Detects	16	Number of Distinct Non-Detects	349
Minimum Detect	0.0291	Minimum Non-Detect	0.0221

Maximum Detect	1.606	Maximum Non-Detect	31.23
Variance Detects	0.264	Percent Non-Detects	95.63%
Mean Detects	0.394	SD Detects	0.514
Median Detects	0.113	CV Detects	1.305
Skewness Detects	1.78	Kurtosis Detects	2.136
Mean of Logged Detects	-1.624	SD of Logged Detects	1.188
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.689	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.887	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.27	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.222	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0535	Standard Error of Mean	0.00934
SD	0.144	95% KM (BCA) UCL	0.0744
95% KM (t) UCL	0.0689	95% KM (Percentile Bootstrap) UCL	0.0708
95% KM (z) UCL	0.0689	95% KM Bootstrap t UCL	0.0761
90% KM Chebyshev UCL	0.0815	95% KM Chebyshev UCL	0.0942
97.5% KM Chebyshev UCL	0.112	99% KM Chebyshev UCL	0.146
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.037	Anderson-Darling GOF Test	
5% A-D Critical Value	0.77	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.275	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.222	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.85	k star (bias corrected MLE)	0.732
Theta hat (MLE)	0.464	Theta star (bias corrected MLE)	0.538
nu hat (MLE)	27.19	nu star (bias corrected)	23.42
MLE Mean (bias corrected)	0.394	MLE Sd (bias corrected)	0.461
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.139	nu hat (KM)	101.6
Approximate Chi Square Value (101.65, α)	79.39	Adjusted Chi Square Value (101.65, β)	79.31
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0685	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0686
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0268
Maximum	1.606	Median	0.01
SD	0.131	CV	4.874
k hat (MLE)	0.706	k star (bias corrected MLE)	0.702
Theta hat (MLE)	0.038	Theta star (bias corrected MLE)	0.0382
nu hat (MLE)	516.7	nu star (bias corrected)	513.8
MLE Mean (bias corrected)	0.0268	MLE Sd (bias corrected)	0.032
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (513.78, α)	462.2	Adjusted Chi Square Value (513.78, β)	462
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0298	95% Gamma Adjusted UCL (use when $n < 50$)	0.0298
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.917	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.887	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.24	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.222	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0248	Mean in Log Scale	-4.706
SD in Original Scale	0.131	SD in Log Scale	0.715
95% t UCL (assumes normality of ROS data)	0.0361	95% Percentile Bootstrap UCL	0.0374
95% BCA Bootstrap UCL	0.041	95% Bootstrap t UCL	0.0493
95% H-UCL (Log ROS)	0.0125		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-3.436	95% H-UCL (KM -Log)	0.0431
KM SD (logged)	0.672	95% Critical H Value (KM-Log)	189.10%
KM Standard Error of Mean (logged)	0.105		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.109	Mean in Log Scale	-1.506
SD in Original Scale	2.814	SD in Log Scale	1.601
95% t UCL (Assumes normality)	1.352	95% H-Stat UCL	1.001
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL 0.0744

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***caprolactam***105-60-2***t***ug/kg)

General Statistics		
Total Number of Observations	366	Number of Distinct Observations 262
Number of Detects	16	Number of Non-Detects 350
Number of Distinct Detects	15	Number of Distinct Non-Detects 249
Minimum Detect	378	Minimum Non-Detect 126
Maximum Detect	21600	Maximum Non-Detect 369500
Variance Detects	45805906	Percent Non-Detects 95.63%
Mean Detects	4258	SD Detects 6768
Median Detects	1475	CV Detects 1.59
Skewness Detects	2.232	Kurtosis Detects 3.877
Mean of Logged Detects	7.529	SD of Logged Detects 1.231

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.583 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.887 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.353 Lilliefors GOF Test
5% Lilliefors Critical Value	0.222 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	410.8	Standard Error of Mean 103.1
SD	1728	95% KM (BCA) UCL 649
95% KM (t) UCL	580.9	95% KM (Percentile Bootstrap) UCL 606.7
95% KM (z) UCL	580.5	95% KM Bootstrap t UCL 729.4
90% KM Chebyshev UCL	720.2	95% KM Chebyshev UCL 860.4
97.5% KM Chebyshev UCL	1055	99% KM Chebyshev UCL 1437

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	1.262 Anderson-Darling GOF Test
5% A-D Critical Value	0.777 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.254 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.224 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.727	k star (bias corrected MLE) 0.632
Theta hat (MLE)	5858	Theta star (bias corrected MLE) 6735
nu hat (MLE)	23.26	nu star (bias corrected) 20.23
MLE Mean (bias corrected)	4258	MLE Sd (bias corrected) 5355

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0565	nu hat (KM) 41.36
Approximate Chi Square Value (41.36, α)	27.62	Adjusted Chi Square Value (41.36, β) 27.58
95% Gamma Approximate KM-UCL (use when n>=50)	615.2	95% Gamma Adjusted KM-UCL (use when n<50) 616.2
Gamma (KM) may not be used when k hat (KM) is < 0.1		

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 186.1
Maximum	21600	Median 0.01
SD	1626	CV 8.733
k hat (MLE)	0.0886	k star (bias corrected MLE) 0.0897
Theta hat (MLE)	2100	Theta star (bias corrected MLE) 2075
nu hat (MLE)	64.87	nu star (bias corrected) 65.67
MLE Mean (bias corrected)	186.1	MLE Sd (bias corrected) 621.5
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (65.67, α)	48.02	Adjusted Chi Square Value (65.67, β) 47.96
95% Gamma Approximate UCL (use when n>=50)	254.5	95% Gamma Adjusted UCL (use when n<50) 254.9

Lognormal GOF Test on Detected Observations Only	
Shapiro Wilk Test Statistic	0.914 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.887 Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.168 Lilliefors GOF Test
5% Lilliefors Critical Value	0.222 Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	223.4	Mean in Log Scale	345.60%
SD in Original Scale	1622	SD in Log Scale	1.225
95% t UCL (assumes normality of ROS data)	363.3	95% Percentile Bootstrap UCL	376
95% BCA Bootstrap UCL	449.3	95% Bootstrap t UCL	732.4
95% H-UCL (Log ROS)	77.79		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	5.147	95% H-UCL (KM -Log)	264.5
KM SD (logged)	0.829	95% Critical H Value (KM-Log)	1.996
KM Standard Error of Mean (logged)	0.0767		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	10958	Mean in Log Scale	7.423
SD in Original Scale	29918	SD in Log Scale	1.757
95% t UCL (Assumes normality)	13536	95% H-Stat UCL	10172
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	649

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***carbazole***86-74-8***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	331	Number of Distinct Observations	329
Number of Detects	301	Number of Non-Detects	30
Number of Distinct Detects	299	Number of Distinct Non-Detects	30
Minimum Detect	0.00254	Minimum Non-Detect	0.496
Maximum Detect	0.991	Maximum Non-Detect	1.209
Variance Detects	0.00653	Percent Non-Detects	9.06%
Mean Detects	0.0438	SD Detects	0.0808
Median Detects	0.0317	CV Detects	1.843
Skewness Detects	9.232	Kurtosis Detects	93.7
Mean of Logged Detects	-3.449	SD of Logged Detects	0.661

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.281	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.331	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0511	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0434	Standard Error of Mean	0.00441
SD	0.0785	95% KM (BCA) UCL	0.0513
95% KM (t) UCL	0.0507	95% KM (Percentile Bootstrap) UCL	0.0508
95% KM (z) UCL	0.0507	95% KM Bootstrap t UCL	0.0588
90% KM Chebyshev UCL	0.0567	95% KM Chebyshev UCL	0.0627
97.5% KM Chebyshev UCL	0.071	99% KM Chebyshev UCL	0.0874

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	15.82	Anderson-Darling GOF Test	
5% A-D Critical Value	0.77	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.183	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0529	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.701	k star (bias corrected MLE)	1.687
Theta hat (MLE)	0.0258	Theta star (bias corrected MLE)	0.026
nu hat (MLE)	1024	nu star (bias corrected)	1015
MLE Mean (bias corrected)	0.0438	MLE Sd (bias corrected)	0.0338

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.306	nu hat (KM)	202.6
Approximate Chi Square Value (202.61, α)	170.7	Adjusted Chi Square Value (202.61, β)	170.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.0516	95% Gamma Adjusted KM-UCL (use when n<50)	0.0516

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00254	Mean 0.0426
Maximum	0.991	Median 0.0308
SD	0.0771	CV 1.809
k hat (MLE)	1.83	k star (bias corrected MLE) 1.816
Theta hat (MLE)	0.0233	Theta star (bias corrected MLE) 0.0235
nu hat (MLE)	1212	nu star (bias corrected) 1202
MLE Mean (bias corrected)	0.0426	MLE Sd (bias corrected) 0.0316
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	1122	Adjusted Chi Square Value (N/A, β) 1122
95% Gamma Approximate UCL (use when n>=50)	0.0457	95% Gamma Adjusted UCL (use when n<50) 0.0457
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0963	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0511	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0427	Mean in Log Scale -3.449
SD in Original Scale	0.0771	SD in Log Scale 0.63
95% t UCL (assumes normality of ROS data)	0.0497	95% Percentile Bootstrap UCL 0.05
95% BCA Bootstrap UCL	0.0538	95% Bootstrap t UCL 0.0584
95% H-UCL (Log ROS)	0.0413	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.0756	Mean in Log Scale -3.223
SD in Original Scale	0.13	SD in Log Scale 0.957
95% t UCL (Assumes normality)	0.0873	95% H-Stat UCL 0.0703
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.0513	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***carbazole***86-74-8***t***ug/kg)		
General Statistics		
Total Number of Observations	331	Number of Distinct Observations 288
Number of Detects	301	Number of Non-Detects 30
Number of Distinct Detects	259	Number of Distinct Non-Detects 29
Minimum Detect	5.07	Minimum Non-Detect 5198
Maximum Detect	9990	Maximum Non-Detect 14650
Variance Detects	634507	Percent Non-Detects 9.06%
Mean Detects	392.3	SD Detects 796.6
Median Detects	276	CV Detects 2.03
Skewness Detects	9.202	Kurtosis Detects 96.25
Mean of Logged Detects	5.453	SD of Logged Detects 0.986
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.322	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.313	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0511	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	388.8	Standard Error of Mean 43.69
SD	775.6	95% KM (BCA) UCL 477.1
95% KM (t) UCL	460.9	95% KM (Percentile Bootstrap) UCL 466.2
95% KM (z) UCL	460.7	95% KM Bootstrap t UCL 533.5
90% KM Chebyshev UCL	519.9	95% KM Chebyshev UCL 579.2
97.5% KM Chebyshev UCL	661.6	99% KM Chebyshev UCL 823.5
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	5.295	Anderson-Darling GOF Test
5% A-D Critical Value	0.782	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0998	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0535	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		

k hat (MLE)	1.101	k star (bias corrected MLE)	1.092
Theta hat (MLE)	356.5	Theta star (bias corrected MLE)	359.4
nu hat (MLE)	662.5	nu star (bias corrected)	657.3
MLE Mean (bias corrected)	392.3	MLE Sd (bias corrected)	375.5
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.251	nu hat (KM)	166.4
Approximate Chi Square Value (166.36, α)	137.5	Adjusted Chi Square Value (166.36, β)	137.4
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	470.3	95% Gamma Adjusted KM-UCL (use when $n < 50$)	470.7
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	5.07	Mean	377.1
Maximum	9990	Median	245
SD	761.2	CV	2.018
k hat (MLE)	1.167	k star (bias corrected MLE)	1.159
Theta hat (MLE)	323	Theta star (bias corrected MLE)	325.4
nu hat (MLE)	772.9	nu star (bias corrected)	767.2
MLE Mean (bias corrected)	377.1	MLE Sd (bias corrected)	350.3
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (767.19, α)	703.9	Adjusted Chi Square Value (767.19, β)	703.7
95% Gamma Approximate UCL (use when $n \geq 50$)	411	95% Gamma Adjusted UCL (use when $n < 50$)	411.2
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0789	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0511	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	377.9	Mean in Log Scale	5.453
SD in Original Scale	760.9	SD in Log Scale	0.941
95% t UCL (assumes normality of ROS data)	446.9	95% Percentile Bootstrap UCL	453.2
95% BCA Bootstrap UCL	470.1	95% Bootstrap t UCL	526.2
95% H-UCL (Log ROS)	404.5		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	729.6	Mean in Log Scale	5.71
SD in Original Scale	1361	SD in Log Scale	1.246
95% t UCL (Assumes normality)	853	95% H-Stat UCL	770.4
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	477.1		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***carbon disulfide***75-15-0***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	170
Number of Detects	141	Number of Non-Detects	31
Number of Distinct Detects	140	Number of Distinct Non-Detects	30
Minimum Detect	5.42E-04	Minimum Non-Detect	0.00163
Maximum Detect	0.0468	Maximum Non-Detect	0.461
Variance Detects	3.20E-05	Percent Non-Detects	18.02%
Mean Detects	0.00555	SD Detects	0.00566
Median Detects	0.00416	CV Detects	1.02
Skewness Detects	3.85	Kurtosis Detects	21.89
Mean of Logged Detects	-5.53	SD of Logged Detects	0.817
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.684	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.189	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0746	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00536	Standard Error of Mean	4.60E-04
SD	0.00557	95% KM (BCA) UCL	0.00623
95% KM (t) UCL	0.00612	95% KM (Percentile Bootstrap) UCL	0.00615

95% KM (z) UCL	0.00612	95% KM Bootstrap t UCL	0.00633
90% KM Chebyshev UCL	0.00674	95% KM Chebyshev UCL	0.00736
97.5% KM Chebyshev UCL	0.00823	99% KM Chebyshev UCL	0.00993

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.131	Anderson-Darling GOF Test
5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0827	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0802	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.639	k star (bias corrected MLE)	1.609
Theta hat (MLE)	0.00338	Theta star (bias corrected MLE)	0.00345
nu hat (MLE)	462.2	nu star (bias corrected)	453.7
MLE Mean (bias corrected)	0.00555	MLE Sd (bias corrected)	0.00437

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.926	nu hat (KM)	318.7
Approximate Chi Square Value (318.68, α)	278.3	Adjusted Chi Square Value (318.68, β)	278
95% Gamma Approximate KM-UCL (use when n>=50)	0.00614	95% Gamma Adjusted KM-UCL (use when n<50)	0.00614

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	5.42E-04	Mean	0.00635
Maximum	0.0468	Median	0.00517
SD	0.0054	CV	0.85
k hat (MLE)	1.796	k star (bias corrected MLE)	1.768
Theta hat (MLE)	0.00354	Theta star (bias corrected MLE)	0.00359
nu hat (MLE)	617.7	nu star (bias corrected)	608.2
MLE Mean (bias corrected)	0.00635	MLE Sd (bias corrected)	0.00478
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (608.24, α)	552	Adjusted Chi Square Value (608.24, β)	551.6
95% Gamma Approximate UCL (use when n>=50)	0.007	95% Gamma Adjusted UCL (use when n<50)	0.007

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.0317 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0746 Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00514	Mean in Log Scale	-5.574
SD in Original Scale	0.00521	SD in Log Scale	0.764
95% t UCL (assumes normality of ROS data)	0.0058	95% Percentile Bootstrap UCL	0.00583
95% BCA Bootstrap UCL	0.00597	95% Bootstrap t UCL	0.006
95% H-UCL (Log ROS)	0.0057		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.578	95% H-UCL (KM -Log)	0.00607
KM SD (logged)	0.83	95% Critical H Value (KM-Log)	2.027
KM Standard Error of Mean (logged)	0.069		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0145	Mean in Log Scale	-5.187
SD in Original Scale	0.0277	SD in Log Scale	1.266
95% t UCL (Assumes normality)	0.018	95% H-Stat UCL	0.0157
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	0.00623		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***carbon disulfide***75-15-0***t***ug/kg)

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	98
Number of Detects	141	Number of Non-Detects	31
Number of Distinct Detects	84	Number of Distinct Non-Detects	19
Minimum Detect	2.8	Minimum Non-Detect	20
Maximum Detect	440	Maximum Non-Detect	5800

Variance Detects	4547	Percent Non-Detects	18.02%
Mean Detects	48.42	SD Detects	67.43
Median Detects	26	CV Detects	1.393
Skewness Detects	3.654	Kurtosis Detects	16.38
Mean of Logged Detects	3.328	SD of Logged Detects	1.016
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.596	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.252	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0746	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	46.74	Standard Error of Mean	5.448
SD	66.03	95% KM (BCA) UCL	56.33
95% KM (t) UCL	55.75	95% KM (Percentile Bootstrap) UCL	56.63
95% KM (z) UCL	55.7	95% KM Bootstrap t UCL	57.84
90% KM Chebyshev UCL	63.08	95% KM Chebyshev UCL	70.49
97.5% KM Chebyshev UCL	80.76	99% KM Chebyshev UCL	100.9
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.279	Anderson-Darling GOF Test	
5% A-D Critical Value	0.782	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.118	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0811	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.042	k star (bias corrected MLE)	1.024
Theta hat (MLE)	46.49	Theta star (bias corrected MLE)	47.28
nu hat (MLE)	293.7	nu star (bias corrected)	288.8
MLE Mean (bias corrected)	48.42	MLE Sd (bias corrected)	47.85
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.501	nu hat (KM)	172.4
Approximate Chi Square Value (172.36, α)	143	Adjusted Chi Square Value (172.36, β)	142.8
95% Gamma Approximate KM-UCL (use when n>=50)	56.34	95% Gamma Adjusted KM-UCL (use when n<50)	56.42
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	44.21
Maximum	440	Median	27
SD	62.55	CV	1.415
k hat (MLE)	0.764	k star (bias corrected MLE)	0.755
Theta hat (MLE)	57.85	Theta star (bias corrected MLE)	58.57
nu hat (MLE)	262.9	nu star (bias corrected)	259.6
MLE Mean (bias corrected)	44.21	MLE Sd (bias corrected)	50.89
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (259.63, α)	223.3	Adjusted Chi Square Value (259.63, β)	223
95% Gamma Approximate UCL (use when n>=50)	51.39	95% Gamma Adjusted UCL (use when n<50)	51.46
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0431	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0746	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	44.35	Mean in Log Scale	3.289
SD in Original Scale	61.94	SD in Log Scale	0.951
95% t UCL (assumes normality of ROS data)	52.16	95% Percentile Bootstrap UCL	52.47
95% BCA Bootstrap UCL	53.31	95% Bootstrap t UCL	53.91
95% H-UCL (Log ROS)	49.18		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	3.286	95% H-UCL (KM -Log)	52.9
KM SD (logged)	1.014	95% Critical H Value (KM-Log)	2.177
KM Standard Error of Mean (logged)	0.0842		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	146.3	Mean in Log Scale	3.742
SD in Original Scale	312.1	SD in Log Scale	1.472
95% t UCL (Assumes normality)	185.7	95% H-Stat UCL	167.4
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			

Suggested UCL to Use		
95% KM (Chebyshev) UCL	70.49	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***chlordan, alpha- (chlordan, cis-)**5103-71-9***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	363	Number of Distinct Observations 356
Number of Detects	319	Number of Non-Detects 44
Number of Distinct Detects	316	Number of Distinct Non-Detects 41
Minimum Detect	2.07E-04	Minimum Non-Detect 1.72E-05
Maximum Detect	0.0336	Maximum Non-Detect 0.0142
Variance Detects	3.19E-05	Percent Non-Detects 12.12%
Mean Detects	0.00524	SD Detects 0.00565
Median Detects	0.00323	CV Detects 1.078
Skewness Detects	2.109	Kurtosis Detects 5.927
Mean of Logged Detects	-5.802	SD of Logged Detects 1.106
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.771	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.187	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0496	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00475	Standard Error of Mean 2.90E-04
SD	0.00549	95% KM (BCA) UCL 0.00527
95% KM (t) UCL	0.00523	95% KM (Percentile Bootstrap) UCL 0.00524
95% KM (z) UCL	0.00523	95% KM Bootstrap t UCL 0.00527
90% KM Chebyshev UCL	0.00562	95% KM Chebyshev UCL 0.00602
97.5% KM Chebyshev UCL	0.00657	99% KM Chebyshev UCL 0.00764
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.238	Anderson-Darling GOF Test
5% A-D Critical Value	0.783	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0923	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0523	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.045	k star (bias corrected MLE) 1.037
Theta hat (MLE)	0.00501	Theta star (bias corrected MLE) 0.00505
nu hat (MLE)	666.6	nu star (bias corrected) 661.7
MLE Mean (bias corrected)	0.00524	MLE Sd (bias corrected) 0.00514
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.748	nu hat (KM) 543.1
Approximate Chi Square Value (543.09, α)	490	Adjusted Chi Square Value (543.09, β) 489.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.00527	95% Gamma Adjusted KM-UCL (use when n<50) 0.00527
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2.07E-04	Mean 0.00581
Maximum	0.0336	Median 0.00407
SD	0.00552	CV 0.949
k hat (MLE)	1.119	k star (bias corrected MLE) 1.112
Theta hat (MLE)	0.0052	Theta star (bias corrected MLE) 0.00523
nu hat (MLE)	812.6	nu star (bias corrected) 807.2
MLE Mean (bias corrected)	0.00581	MLE Sd (bias corrected) 0.00551
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (807.17, α)	742.2	Adjusted Chi Square Value (807.17, β) 742
95% Gamma Approximate UCL (use when n>=50)	0.00632	95% Gamma Adjusted UCL (use when n<50) 0.00633
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.056	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0496	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00472	Mean in Log Scale -5.991
SD in Original Scale	0.00548	SD in Log Scale 1.206
95% t UCL (assumes normality of ROS data)	0.0052	95% Percentile Bootstrap UCL 0.00521

95% BCA Bootstrap UCL	0.00523	95% Bootstrap t UCL	0.00523
95% H-UCL (Log ROS)	0.00599		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00485	Mean in Log Scale	-6.105
SD in Original Scale	0.00545	SD in Log Scale	1.618
95% t UCL (Assumes normality)	0.00533	95% H-Stat UCL	0.0104
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.00602		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***chlordan, alpha- (chlordan, cis-)**5103-71-9***t***ug/kg)			
General Statistics			
Total Number of Observations	363	Number of Distinct Observations	299
Number of Detects	319	Number of Non-Detects	44
Number of Distinct Detects	265	Number of Distinct Non-Detects	37
Minimum Detect	0.327	Minimum Non-Detect	0.18
Maximum Detect	442	Maximum Non-Detect	123.4
Variance Detects	4529	Percent Non-Detects	12.12%
Mean Detects	52.93	SD Detects	67.3
Median Detects	28	CV Detects	1.271
Skewness Detects	2.539	Kurtosis Detects	8.967
Mean of Logged Detects	3.096	SD of Logged Detects	1.494
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.732	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.217	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0496	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	47.89	Standard Error of Mean	3.427
SD	64.88	95% KM (BCA) UCL	53.55
95% KM (t) UCL	53.54	95% KM (Percentile Bootstrap) UCL	53.53
95% KM (z) UCL	53.52	95% KM Bootstrap t UCL	54.15
90% KM Chebyshev UCL	58.17	95% KM Chebyshev UCL	62.83
97.5% KM Chebyshev UCL	69.29	99% KM Chebyshev UCL	81.99
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.594	Anderson-Darling GOF Test	
5% A-D Critical Value	0.803	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0985	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.053	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.693	k star (bias corrected MLE)	0.689
Theta hat (MLE)	76.35	Theta star (bias corrected MLE)	76.84
nu hat (MLE)	442.3	nu star (bias corrected)	439.5
MLE Mean (bias corrected)	52.93	MLE Sd (bias corrected)	63.77
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.545	nu hat (KM)	395.5
Approximate Chi Square Value (395.53, α)	350.4	Adjusted Chi Square Value (395.53, β)	350.3
95% Gamma Approximate KM-UCL (use when n>=50)	54.05	95% Gamma Adjusted KM-UCL (use when n<50)	54.08

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	47.36
Maximum	442	Median	18.76
SD	64.91	CV	1.37
k hat (MLE)	0.491	k star (bias corrected MLE)	0.489
Theta hat (MLE)	96.42	Theta star (bias corrected MLE)	96.85
nu hat (MLE)	356.6	nu star (bias corrected)	355
MLE Mean (bias corrected)	47.36	MLE Sd (bias corrected)	67.73
		Adjusted Level of Significance (β)	0.0493

Approximate Chi Square Value (355.01, α)	312.3	Adjusted Chi Square Value (355.01, β)	312.2
95% Gamma Approximate UCL (use when $n \geq 50$)	53.83	95% Gamma Adjusted UCL (use when $n < 50$)	53.86
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.105	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0496	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	47.24	Mean in Log Scale	2.846
SD in Original Scale	64.95	SD in Log Scale	1.622
95% t UCL (assumes normality of ROS data)	52.86	95% Percentile Bootstrap UCL	53.11
95% BCA Bootstrap UCL	53.61	95% Bootstrap t UCL	53.41
95% H-UCL (Log ROS)	80.83		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	49.04	Mean in Log Scale	2.825
SD in Original Scale	64.44	SD in Log Scale	1.85
95% t UCL (Assumes normality)	54.62	95% H-Stat UCL	124.3
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	62.83		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***chlordan, beta- (chlordan, trans-)**5103-74-2***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	345
Number of Detects	268	Number of Non-Detects	94
Number of Distinct Detects	268	Number of Distinct Non-Detects	77
Minimum Detect	2.06E-04	Minimum Non-Detect	1.72E-05
Maximum Detect	0.0494	Maximum Non-Detect	0.011
Variance Detects	6.30E-05	Percent Non-Detects	25.97%
Mean Detects	0.0077	SD Detects	0.00794
Median Detects	0.0052	CV Detects	1.03
Skewness Detects	2.095	Kurtosis Detects	6.062
Mean of Logged Detects	-5.391	SD of Logged Detects	1.109
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.792	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.172	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0541	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00581	Standard Error of Mean	3.99E-04
SD	0.00756	95% KM (BCA) UCL	0.00652
95% KM (t) UCL	0.00647	95% KM (Percentile Bootstrap) UCL	0.00646
95% KM (z) UCL	0.00647	95% KM Bootstrap t UCL	0.0065
90% KM Chebyshev UCL	0.00701	95% KM Chebyshev UCL	0.00755
97.5% KM Chebyshev UCL	0.0083	99% KM Chebyshev UCL	0.00978
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.175	Anderson-Darling GOF Test	
5% A-D Critical Value	0.782	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0572	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0573	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.089	k star (bias corrected MLE)	1.079
Theta hat (MLE)	0.00708	Theta star (bias corrected MLE)	0.00714
nu hat (MLE)	583.5	nu star (bias corrected)	578.3
MLE Mean (bias corrected)	0.0077	MLE Sd (bias corrected)	0.00742
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.59	nu hat (KM)	427.3
Approximate Chi Square Value (427.27, α)	380.4	Adjusted Chi Square Value (427.27, β)	380.2
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00653	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00653
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2.06E-04	Mean 0.0083
Maximum	0.0494	Median 0.00859
SD	0.0069	CV 0.831
k hat (MLE)	1.407	k star (bias corrected MLE) 1.398
Theta hat (MLE)	0.0059	Theta star (bias corrected MLE) 0.00594
nu hat (MLE)	1019	nu star (bias corrected) 1012
MLE Mean (bias corrected)	0.0083	MLE Sd (bias corrected) 0.00702
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (N/A, α)	939	Adjusted Chi Square Value (N/A, β) 938.7
95% Gamma Approximate UCL (use when n>=50)	0.00894	95% Gamma Adjusted UCL (use when n<50) 0.00895
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0613	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0541	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00587	Mean in Log Scale -5.943
SD in Original Scale	0.0075	SD in Log Scale 1.361
95% t UCL (assumes normality of ROS data)	0.00652	95% Percentile Bootstrap UCL 0.00655
95% BCA Bootstrap UCL	0.0066	95% Bootstrap t UCL 0.00659
95% H-UCL (Log ROS)	0.0079	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.00589	Mean in Log Scale -6.562
SD in Original Scale	0.00753	SD in Log Scale 2.42
95% t UCL (Assumes normality)	0.00654	95% H-Stat UCL 0.0415
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (Percentile Bootstrap) UCL	0.00646	95% GROS Approximate Gamma UCL 0.00894
95% Approximate Gamma KM-UCL	0.00653	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***chlordan, beta- (chlordan, trans-)**5103-74-2****ug/kg)		
General Statistics		
Total Number of Observations	362	Number of Distinct Observations 276
Number of Detects	268	Number of Non-Detects 94
Number of Distinct Detects	241	Number of Distinct Non-Detects 38
Minimum Detect	0.265	Minimum Non-Detect 0.11
Maximum Detect	687	Maximum Non-Detect 115.6
Variance Detects	8889	Percent Non-Detects 25.97%
Mean Detects	78.7	SD Detects 94.28
Median Detects	51.8	CV Detects 1.198
Skewness Detects	2.692	Kurtosis Detects 10.89
Mean of Logged Detects	3.551	SD of Logged Detects 1.505
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.75	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.203	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0541	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	59.2	Standard Error of Mean 462.70%
SD	87.69	95% KM (BCA) UCL 67.18
95% KM (t) UCL	66.83	95% KM (Percentile Bootstrap) UCL 67.2
95% KM (z) UCL	66.81	95% KM Bootstrap t UCL 67.26
90% KM Chebyshev UCL	73.08	95% KM Chebyshev UCL 79.37
97.5% KM Chebyshev UCL	88.09	99% KM Chebyshev UCL 105.2
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.857	Anderson-Darling GOF Test
5% A-D Critical Value	0.798	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0733	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0581	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.737 k star (bias corrected MLE)	0.731
Theta hat (MLE)	106.8 Theta star (bias corrected MLE)	107.6
nu hat (MLE)	395 nu star (bias corrected)	392
MLE Mean (bias corrected)	78.7 MLE Sd (bias corrected)	92.03
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.456 nu hat (KM)	330
Approximate Chi Square Value (329.96, α)	288.9 Adjusted Chi Square Value (329.96, β)	288.7
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	67.62 95% Gamma Adjusted KM-UCL (use when $n < 50$)	67.65
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	58.59
Maximum	687 Median	20.75
SD	87.95 CV	1.501
k hat (MLE)	0.289 k star (bias corrected MLE)	0.288
Theta hat (MLE)	202.8 Theta star (bias corrected MLE)	203.2
nu hat (MLE)	209.1 nu star (bias corrected)	208.7
MLE Mean (bias corrected)	58.59 MLE Sd (bias corrected)	109.1
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (208.72, α)	176.3 Adjusted Chi Square Value (208.72, β)	176.2
95% Gamma Approximate UCL (use when $n \geq 50$)	69.37 95% Gamma Adjusted UCL (use when $n < 50$)	69.42
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.135 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0541 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	59.03 Mean in Log Scale	2.809
SD in Original Scale	87.65 SD in Log Scale	1.854
95% t UCL (assumes normality of ROS data)	66.63 95% Percentile Bootstrap UCL	67.15
95% BCA Bootstrap UCL	68.15 95% Bootstrap t UCL	67.27
95% H-UCL (Log ROS)	123.4	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	60.2 Mean in Log Scale	2.367
SD in Original Scale	87.33 SD in Log Scale	2.62
95% t UCL (Assumes normality)	67.77 95% H-Stat UCL	553.9
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
97.5% KM (Chebyshev) UCL	88.09	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***chlorobenzene***108-90-7***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	172 Number of Distinct Observations	161
Number of Detects	25 Number of Non-Detects	147
Number of Distinct Detects	24 Number of Distinct Non-Detects	140
Minimum Detect	1.00E-04 Minimum Non-Detect	1.60E-04
Maximum Detect	0.0699 Maximum Non-Detect	0.156
Variance Detects	1.92E-04 Percent Non-Detects	85.47%
Mean Detects	0.00394 SD Detects	0.0139
Median Detects	3.59E-04 CV Detects	3.522
Skewness Detects	4.866 Kurtosis Detects	24.03
Mean of Logged Detects	-7.456 SD of Logged Detects	1.637
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.289 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.391 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	8.03E-04 Standard Error of Mean	4.68E-04

SD	0.00567	95% KM (BCA) UCL	0.00173
95% KM (t) UCL	0.00158	95% KM (Percentile Bootstrap) UCL	0.00171
95% KM (z) UCL	0.00157	95% KM Bootstrap t UCL	0.00562
90% KM Chebyshev UCL	0.00221	95% KM Chebyshev UCL	0.00284
97.5% KM Chebyshev UCL	0.00373	99% KM Chebyshev UCL	0.00546

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.032	Anderson-Darling GOF Test	
5% A-D Critical Value	0.84	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.262	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.188	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.35	k star (bias corrected MLE)	0.335
Theta hat (MLE)	0.0112	Theta star (bias corrected MLE)	0.0118
nu hat (MLE)	17.52	nu star (bias corrected)	16.75
MLE Mean (bias corrected)	0.00394	MLE Sd (bias corrected)	0.0068

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0201	nu hat (KM)	6.904
Approximate Chi Square Value (6.90, α)	2.118	Adjusted Chi Square Value (6.90, β)	2.096
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00262	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00265
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.00E-04	Mean	0.00912
Maximum	0.0699	Median	0.01
SD	0.00562	CV	0.616
k hat (MLE)	1.7	k star (bias corrected MLE)	1.674
Theta hat (MLE)	0.00537	Theta star (bias corrected MLE)	0.00545
nu hat (MLE)	584.7	nu star (bias corrected)	575.8
MLE Mean (bias corrected)	0.00912	MLE Sd (bias corrected)	0.00705
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (575.81, α)	521.2	Adjusted Chi Square Value (575.81, β)	520.7
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0101	95% Gamma Adjusted UCL (use when $n < 50$)	0.0101

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.166	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.11E-04	Mean in Log Scale	-8.557
SD in Original Scale	0.00536	SD in Log Scale	0.788
95% t UCL (assumes normality of ROS data)	0.00139	95% Percentile Bootstrap UCL	0.00152
95% BCA Bootstrap UCL	0.00198	95% Bootstrap t UCL	0.00598
95% H-UCL (Log ROS)	2.95E-04		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.527	95% H-UCL (KM -Log)	3.49E-04
KM SD (logged)	0.916	95% Critical H Value (KM-Log)	2.094
KM Standard Error of Mean (logged)	0.112		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00816	Mean in Log Scale	-7.258
SD in Original Scale	0.0197	SD in Log Scale	1.938
95% t UCL (Assumes normality)	0.0106	95% H-Stat UCL	0.00733
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.00284		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***chlorobenzene***108-90-7***t***ug/kg)

General Statistics

Total Number of Observations	172	Number of Distinct Observations	69
Number of Detects	25	Number of Non-Detects	147
Number of Distinct Detects	22	Number of Distinct Non-Detects	54
Minimum Detect	1.1	Minimum Non-Detect	1.7
Maximum Detect	763.7	Maximum Non-Detect	1700
Variance Detects	23203	Percent Non-Detects	85.47%
Mean Detects	43.73	SD Detects	152.3
Median Detects	3.5	CV Detects	3.483
Skewness Detects	4.77	Kurtosis Detects	23.31
Mean of Logged Detects	1.779	SD of Logged Detects	1.616
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.299	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.408	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	8.615	Standard Error of Mean	5.121
SD	62.17	95% KM (BCA) UCL	18.64
95% KM (t) UCL	17.08	95% KM (Percentile Bootstrap) UCL	18.46
95% KM (z) UCL	17.04	95% KM Bootstrap t UCL	88.98
90% KM Chebyshev UCL	23.98	95% KM Chebyshev UCL	30.94
97.5% KM Chebyshev UCL	40.6	99% KM Chebyshev UCL	59.57
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.709	Anderson-Darling GOF Test	
5% A-D Critical Value	0.843	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.34	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.189	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.338	k star (bias corrected MLE)	0.324
Theta hat (MLE)	129.3	Theta star (bias corrected MLE)	134.8
nu hat (MLE)	16.91	nu star (bias corrected)	16.21
MLE Mean (bias corrected)	43.73	MLE Sd (bias corrected)	76.79
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0192	nu hat (KM)	6.604
Approximate Chi Square Value (6.60, α)	1.956	Adjusted Chi Square Value (6.60, β)	1.935
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	29.09	95% Gamma Adjusted KM-UCL (use when $n < 50$)	29.4
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	6.365
Maximum	763.7	Median	0.01
SD	59.12	CV	9.289
k hat (MLE)	0.14	k star (bias corrected MLE)	0.142
Theta hat (MLE)	45.34	Theta star (bias corrected MLE)	44.89
nu hat (MLE)	48.29	nu star (bias corrected)	48.78
MLE Mean (bias corrected)	6.365	MLE Sd (bias corrected)	16.9
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (48.78, α)	33.75	Adjusted Chi Square Value (48.78, β)	33.64
95% Gamma Approximate UCL (use when $n \geq 50$)	9.2	95% Gamma Adjusted UCL (use when $n < 50$)	9.229
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.84	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.918	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.203	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.177	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.801	Mean in Log Scale	0.518
SD in Original Scale	58.98	SD in Log Scale	1.026
95% t UCL (assumes normality of ROS data)	15.24	95% Percentile Bootstrap UCL	16.36
95% BCA Bootstrap UCL	23.18	95% Bootstrap t UCL	51.36
95% H-UCL (Log ROS)	3.372		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	82.95	Mean in Log Scale	1.672
SD in Original Scale	198.3	SD in Log Scale	2.099
95% t UCL (Assumes normality)	108	95% H-Stat UCL	82.05
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL 30.94

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***chromium vi***18540-29-9***t***mg/kg)

General Statistics			
Total Number of Observations	124	Number of Distinct Observations	57
Number of Detects	64	Number of Non-Detects	60
Number of Distinct Detects	42	Number of Distinct Non-Detects	27
Minimum Detect	0.28	Minimum Non-Detect	0.94
Maximum Detect	3.6	Maximum Non-Detect	7.9
Variance Detects	0.578	Percent Non-Detects	48.39%
Mean Detects	1.259	SD Detects	0.76
Median Detects	1.05	CV Detects	0.604
Skewness Detects	1.096	Kurtosis Detects	0.749
Mean of Logged Detects	0.0535	SD of Logged Detects	61.10%

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.896	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	9.99E-06	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.133	Lilliefors GOF Test
5% Lilliefors Critical Value	0.111	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.152	Standard Error of Mean	0.0755
SD	0.674	95% KM (BCA) UCL	1.278
95% KM (t) UCL	1.277	95% KM (Percentile Bootstrap) UCL	1.277
95% KM (z) UCL	1.276	95% KM Bootstrap t UCL	1.283
90% KM Chebyshev UCL	1.378	95% KM Chebyshev UCL	1.481
97.5% KM Chebyshev UCL	1.623	99% KM Chebyshev UCL	1.903

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	0.375 Anderson-Darling GOF Test
5% A-D Critical Value	0.758 Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0736 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.112 Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.99	k star (bias corrected MLE)	2.86
Theta hat (MLE)	0.421	Theta star (bias corrected MLE)	0.44
nu hat (MLE)	382.7	nu star (bias corrected)	366.1
MLE Mean (bias corrected)	1.259	MLE Sd (bias corrected)	0.744

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.918	nu hat (KM)	723.6
Approximate Chi Square Value (723.55, α)	662.1	Adjusted Chi Square Value (723.55, β)	661.5
95% Gamma Approximate KM-UCL (use when n>=50)	1.258	95% Gamma Adjusted KM-UCL (use when n<50)	1.26

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.28	Mean	1.131
Maximum	3.6	Median	1
SD	0.606	CV	0.536
k hat (MLE)	4.154	k star (bias corrected MLE)	4.059
Theta hat (MLE)	0.272	Theta star (bias corrected MLE)	0.279
nu hat (MLE)	1030	nu star (bias corrected)	1007
MLE Mean (bias corrected)	1.131	MLE Sd (bias corrected)	0.561
		Adjusted Level of Significance (β)	0.0481
Approximate Chi Square Value (N/A, α)	933.9	Adjusted Chi Square Value (N/A, β)	933.1
95% Gamma Approximate UCL (use when n>=50)	1.219	95% Gamma Adjusted UCL (use when n<50)	1.22

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.069 Lilliefors GOF Test
5% Lilliefors Critical Value	0.111 Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.113	Mean in Log Scale	-0.0166
SD in Original Scale	0.603	SD in Log Scale	0.493
95% t UCL (assumes normality of ROS data)	1.203	95% Percentile Bootstrap UCL	1.203
95% BCA Bootstrap UCL	1.216	95% Bootstrap t UCL	1.207
95% H-UCL (Log ROS)	1.20E+00		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.0222	95% H-UCL (KM -Log)	1.276
KM SD (logged)	0.58	95% Critical H Value (KM-Log)	1.87
KM Standard Error of Mean (logged)	0.0694		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.332	Mean in Log Scale	0.166
SD in Original Scale	0.652	SD in Log Scale	0.512
95% t UCL (Assumes normality)	1.429	95% H-Stat UCL	1.465
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.277	95% GROS Approximate Gamma UCL	1.219
95% Approximate Gamma KM-UCL	1.258		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***chromium vi***18540-29-9***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	124	Number of Distinct Observations	120
Number of Detects	64	Number of Non-Detects	60
Number of Distinct Detects	61	Number of Distinct Non-Detects	59
Minimum Detect	0.0286	Minimum Non-Detect	16.90%
Maximum Detect	0.402	Maximum Non-Detect	0.86
Variance Detects	0.00702	Percent Non-Detects	48.39%
Mean Detects	0.129	SD Detects	0.0838
Median Detects	0.11	CV Detects	0.648
Skewness Detects	1.55	Kurtosis Detects	2.484
Mean of Logged Detects	-2.231	SD of Logged Detects	0.619
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.851	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	1.46E-08	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.149	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.111	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.122	Standard Error of Mean	0.00854
SD	0.0748	95% KM (BCA) UCL	0.137
95% KM (t) UCL	0.136	95% KM (Percentile Bootstrap) UCL	0.136
95% KM (z) UCL	0.136	95% KM Bootstrap t UCL	0.138
90% KM Chebyshev UCL	0.148	95% KM Chebyshev UCL	0.159
97.5% KM Chebyshev UCL	0.175	99% KM Chebyshev UCL	0.207
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.41	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0702	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.112	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.853	k star (bias corrected MLE)	2.73
Theta hat (MLE)	0.0453	Theta star (bias corrected MLE)	0.0474
nu hat (MLE)	365.2	nu star (bias corrected)	349.4
MLE Mean (bias corrected)	0.129	MLE Sd (bias corrected)	0.0782
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.666	nu hat (KM)	661.2
Approximate Chi Square Value (661.16, α)	602.5	Adjusted Chi Square Value (661.16, β)	601.9
95% Gamma Approximate KM-UCL (use when n>=50)	0.134	95% Gamma Adjusted KM-UCL (use when n<50)	0.134
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0286 Mean	0.118
Maximum	0.402 Median	0.107
SD	0.0614 CV	0.522
k hat (MLE)	5.064 k star (bias corrected MLE)	4.947
Theta hat (MLE)	0.0232 Theta star (bias corrected MLE)	0.0238
nu hat (MLE)	1256 nu star (bias corrected)	1227
MLE Mean (bias corrected)	0.118 MLE Sd (bias corrected)	0.0528
	Adjusted Level of Significance (β)	0.0481
Approximate Chi Square Value (N/A, α)	1147 Adjusted Chi Square Value (N/A, β)	1146
95% Gamma Approximate UCL (use when n>=50)	0.126 95% Gamma Adjusted UCL (use when n<50)	0.126
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0508 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.111 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.115 Mean in Log Scale	-2.267
SD in Original Scale	0.0619 SD in Log Scale	0.446
95% t UCL (assumes normality of ROS data)	0.124 95% Percentile Bootstrap UCL	0.125
95% BCA Bootstrap UCL	0.126 95% Bootstrap t UCL	0.125
95% H-UCL (Log ROS)	0.123	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-2.271 95% H-UCL (KM -Log)	0.135
KM SD (logged)	0.587 95% Critical H Value (KM-Log)	1.874
KM Standard Error of Mean (logged)	0.0714	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.172 Mean in Log Scale	-1.946
SD in Original Scale	0.104 SD in Log Scale	0.629
95% t UCL (Assumes normality)	0.187 95% H-Stat UCL	0.194
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.136 95% GROS Approximate Gamma UCL	0.126
95% Approximate Gamma KM-UCL	0.134	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***chromium***7440-47-3***t***mg/kg)		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	313
	Number of Missing Observations	0
Minimum	5.01 Mean	178.3
Maximum	1430 Median	97.4
SD	196.7 Std. Error of Mean	1028.00%
Coefficient of Variation	1.103 Skewness	3.031
Normal GOF Test		
Shapiro Wilk Test Statistic	0.673 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.219 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	195.3 95% Adjusted-CLT UCL (Chen-1995)	197
	95% Modified-t UCL (Johnson-1978)	195.5
Gamma GOF Test		
A-D Test Statistic	12.72 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.775 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.172 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0485 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	1.409 k star (bias corrected MLE)	1.399
Theta hat (MLE)	126.5 Theta star (bias corrected MLE)	127.4

nu hat (MLE)	1031	nu star (bias corrected)	1024
MLE Mean (bias corrected)	178.3	MLE Sd (bias corrected)	150.7
		Approximate Chi Square Value (0.05)	951
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	950.8
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	192.1	95% Adjusted Gamma UCL (use when n<50)	192.1
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.96	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	2.27E-08	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.125	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.611	Mean of logged Data	4.789
Maximum of Logged Data	7.265	SD of logged Data	0.86
Assuming Lognormal Distribution			
95% H-UCL	190.3	90% Chebyshev (MVUE) UCL	200.8
95% Chebyshev (MVUE) UCL	213.2	97.5% Chebyshev (MVUE) UCL	230.3
99% Chebyshev (MVUE) UCL	264		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	195.2	95% Jackknife UCL	195.3
95% Standard Bootstrap UCL	195	95% Bootstrap-t UCL	196.9
95% Hall's Bootstrap UCL	197.3	95% Percentile Bootstrap UCL	195.1
95% BCA Bootstrap UCL	197.1		
90% Chebyshev(Mean, Sd) UCL	209.2	95% Chebyshev(Mean, Sd) UCL	223.1
97.5% Chebyshev(Mean, Sd) UCL	242.5	99% Chebyshev(Mean, Sd) UCL	280.6
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	223.1		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***chromium***7440-47-3***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
		Number of Missing Observations	0
Minimum	0.286	Mean	20.68
Maximum	118.8	Median	17.18
SD	15.83	Std. Error of Mean	0.827
Coefficient of Variation	0.765	Skewness	2.151
Normal GOF Test			
Shapiro Wilk Test Statistic	0.819	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.163	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	22.05	95% Adjusted-CLT UCL (Chen-1995)	22.14
		95% Modified-t UCL (Johnson-1978)	22.06
Gamma GOF Test			
A-D Test Statistic	2.18	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.766	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0716	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0481	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.054	k star (bias corrected MLE)	2.039
Theta hat (MLE)	10.07	Theta star (bias corrected MLE)	10.14
nu hat (MLE)	1503	nu star (bias corrected)	1492
MLE Mean (bias corrected)	20.68	MLE Sd (bias corrected)	14.48
		Approximate Chi Square Value (0.05)	1404
Adjusted Level of Significance	4.93E-02	Adjusted Chi Square Value	1403

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	21.99	95% Adjusted Gamma UCL (use when n<50)	2199.00%
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.959	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.13E-08	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0807	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-1.251	Mean of logged Data	2.766
Maximum of Logged Data	4.777	SD of logged Data	0.778
Assuming Lognormal Distribution			
95% H-UCL	23.31	90% Chebyshev (MVUE) UCL	24.49
95% Chebyshev (MVUE) UCL	25.84	97.5% Chebyshev (MVUE) UCL	27.72
99% Chebyshev (MVUE) UCL	31.4		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	22.04	95% Jackknife UCL	22.05
95% Standard Bootstrap UCL	22.07	95% Bootstrap-t UCL	22.19
95% Hall's Bootstrap UCL	22.16	95% Percentile Bootstrap UCL	22.05
95% BCA Bootstrap UCL	22.1		
90% Chebyshev(Mean, Sd) UCL	23.16	95% Chebyshev(Mean, Sd) UCL	24.29
97.5% Chebyshev(Mean, Sd) UCL	25.85	99% Chebyshev(Mean, Sd) UCL	28.91
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	24.29		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***chrysene***218-01-9***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	364
Number of Detects	359	Number of Non-Detects	7
Number of Distinct Detects	357	Number of Distinct Non-Detects	7
Minimum Detect	0.089	Minimum Non-Detect	0.856
Maximum Detect	3.82	Maximum Non-Detect	2.414
Variance Detects	0.189	Percent Non-Detects	1.91%
Mean Detects	0.577	SD Detects	0.435
Median Detects	0.455	CV Detects	0.753
Skewness Detects	3.47	Kurtosis Detects	16.12
Mean of Logged Detects	-0.717	SD of Logged Detects	0.533
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.671	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.201	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.575	Standard Error of Mean	0.0226
SD	0.431	95% KM (BCA) UCL	0.611
95% KM (t) UCL	0.613	95% KM (Percentile Bootstrap) UCL	0.612
95% KM (z) UCL	0.612	95% KM Bootstrap t UCL	0.617
90% KM Chebyshev UCL	0.643	95% KM Chebyshev UCL	0.674
97.5% KM Chebyshev UCL	0.717	99% KM Chebyshev UCL	0.8
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	10.19	Anderson-Darling GOF Test	
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.116	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0483	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.164	k star (bias corrected MLE)	3.139
Theta hat (MLE)	0.182	Theta star (bias corrected MLE)	0.184
nu hat (MLE)	2271	nu star (bias corrected)	2254
MLE Mean (bias corrected)	0.577	MLE Sd (bias corrected)	0.326
Gamma Kaplan-Meier (KM) Statistics			

k hat (KM)	1.779	nu hat (KM)	1303
Approximate Chi Square Value (N/A, α)	1220	Adjusted Chi Square Value (N/A, β)	1219
95% Gamma Approximate KM-UCL (use when n>=50)	0.614	95% Gamma Adjusted KM-UCL (use when n<50)	0.614
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.089	Mean	0.575
Maximum	3.82	Median	0.46
SD	0.431	CV	0.749
k hat (MLE)	3.216	k star (bias corrected MLE)	3.191
Theta hat (MLE)	0.179	Theta star (bias corrected MLE)	18.00%
nu hat (MLE)	2354	nu star (bias corrected)	2336
MLE Mean (bias corrected)	0.575	MLE Sd (bias corrected)	0.322
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2225	Adjusted Chi Square Value (N/A, β)	2224
95% Gamma Approximate UCL (use when n>=50)	0.604	95% Gamma Adjusted UCL (use when n<50)	0.604
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0716	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.575	Mean in Log Scale	-0.717
SD in Original Scale	0.431	SD in Log Scale	0.528
95% t UCL (assumes normality of ROS data)	0.612	95% Percentile Bootstrap UCL	0.615
95% BCA Bootstrap UCL	0.616	95% Bootstrap t UCL	0.617
95% H-UCL (Log ROS)	0.59		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.579	Mean in Log Scale	-0.711
SD in Original Scale	0.433	SD in Log Scale	0.532
95% t UCL (Assumes normality)	0.617	95% H-Stat UCL	0.595
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.611		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***chrysene***218-01-9***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	300
Number of Detects	359	Number of Non-Detects	7
Number of Distinct Detects	293	Number of Distinct Non-Detects	7
Minimum Detect	139	Minimum Non-Detect	7831
Maximum Detect	57100	Maximum Non-Detect	28030
Variance Detects	34586876	Percent Non-Detects	1.91%
Mean Detects	5308	SD Detects	5881
Median Detects	3970	CV Detects	1.108
Skewness Detects	4.145	Kurtosis Detects	24.92
Mean of Logged Detects	8.207	SD of Logged Detects	0.851
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.643	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.205	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5287	Standard Error of Mean	306.2
SD	5834	95% KM (BCA) UCL	5821
95% KM (t) UCL	5792	95% KM (Percentile Bootstrap) UCL	5817
95% KM (z) UCL	5790	95% KM Bootstrap t UCL	5898
90% KM Chebyshev UCL	6205	95% KM Chebyshev UCL	6621
97.5% KM Chebyshev UCL	7199	99% KM Chebyshev UCL	8333
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.09	Anderson-Darling GOF Test	

5% A-D Critical Value	0.773	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.07	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0489	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.497	k star (bias corrected MLE)	1.487
Theta hat (MLE)	3545	Theta star (bias corrected MLE)	3570
nu hat (MLE)	1075	nu star (bias corrected)	1068
MLE Mean (bias corrected)	5308	MLE Sd (bias corrected)	4354
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.821	nu hat (KM)	601
Approximate Chi Square Value (601.05, α)	545.2	Adjusted Chi Square Value (601.05, β)	545
95% Gamma Approximate KM-UCL (use when n>=50)	5828	95% Gamma Adjusted KM-UCL (use when n<50)	5831
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	139	Mean	5273
Maximum	57100	Median	3885
SD	5830	CV	1.106
k hat (MLE)	1.518	k star (bias corrected MLE)	1.508
Theta hat (MLE)	3473	Theta star (bias corrected MLE)	3498
nu hat (MLE)	1111	nu star (bias corrected)	#####
MLE Mean (bias corrected)	5273	MLE Sd (bias corrected)	4295
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1027	Adjusted Chi Square Value (N/A, β)	1027
95% Gamma Approximate UCL (use when n>=50)	5664	95% Gamma Adjusted UCL (use when n<50)	5665
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0505	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	5272	Mean in Log Scale	8.206
SD in Original Scale	5830	SD in Log Scale	0.843
95% t UCL (assumes normality of ROS data)	5774	95% Percentile Bootstrap UCL	5801
95% BCA Bootstrap UCL	5878	95% Bootstrap t UCL	5875
95% H-UCL (Log ROS)	5707		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	8.205	95% H-UCL (KM -Log)	5732
KM SD (logged)	0.848	95% Critical H Value (KM-Log)	2.01
KM Standard Error of Mean (logged)	0.0447		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5361	Mean in Log Scale	8.22
SD in Original Scale	5865	SD in Log Scale	0.851
95% t UCL (Assumes normality)	5867	95% H-Stat UCL	5832
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	5821		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***cobalt***7440-48-4***t***mg/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	234
		Number of Missing Observations	0
Minimum	0.761	Mean	12.52
Maximum	68.9	Median	11.2
SD	7.778	Std. Error of Mean	0.407
Coefficient of Variation	0.621	Skewness	3.377
Normal GOF Test			
Shapiro Wilk Test Statistic	0.731	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	

Lilliefors Test Statistic	0.199	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	13.19	95% Adjusted-CLT UCL (Chen-1995)	13.27
		95% Modified-t UCL (Johnson-1978)	13.2
Gamma GOF Test			
A-D Test Statistic	7.733	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0478	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.724	k star (bias corrected MLE)	3.695
Theta hat (MLE)	3.362	Theta star (bias corrected MLE)	3.388
nu hat (MLE)	2726	nu star (bias corrected)	2705
MLE Mean (bias corrected)	12.52	MLE Sd (bias corrected)	6.513
		Approximate Chi Square Value (0.05)	2585
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2584
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	13.1	95% Adjusted Gamma UCL (use when n<50)	13.1
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.938	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.105	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-0.273	Mean of logged Data	2.387
Maximum of Logged Data	4.233	SD of logged Data	0.538
Assuming Lognormal Distribution			
95% H-UCL	13.24	90% Chebyshev (MVUE) UCL	13.7
95% Chebyshev (MVUE) UCL	14.22	97.5% Chebyshev (MVUE) UCL	14.93
99% Chebyshev (MVUE) UCL	16.33		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	13.19	95% Jackknife UCL	13.19
95% Standard Bootstrap UCL	13.19	95% Bootstrap-t UCL	13.28
95% Hall's Bootstrap UCL	13.3	95% Percentile Bootstrap UCL	13.19
95% BCA Bootstrap UCL	13.3		
90% Chebyshev(Mean, Sd) UCL	13.74	95% Chebyshev(Mean, Sd) UCL	14.29
97.5% Chebyshev(Mean, Sd) UCL	15.06	99% Chebyshev(Mean, Sd) UCL	16.57
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	14.29		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***cobalt***7440-48-4***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	363
		Number of Missing Observations	0
Minimum	0.0435	Mean	1.768
Maximum	6.372	Median	1.601
SD	1.072	Std. Error of Mean	0.056
Coefficient of Variation	0.606	Skewness	1.011
Normal GOF Test			
Shapiro Wilk Test Statistic	0.923	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0885	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			

95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.86	95% Adjusted-CLT UCL (Chen-1995) 1.863
		95% Modified-t UCL (Johnson-1978) 1.861
Gamma GOF Test		
A-D Test Statistic	1.057	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.762	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0515	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.048	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	2.602	k star (bias corrected MLE) 2.583
Theta hat (MLE)	0.679	Theta star (bias corrected MLE) 0.685
nu hat (MLE)	1905	nu star (bias corrected) 1890
MLE Mean (bias corrected)	1.768	MLE Sd (bias corrected) 1.1
		Approximate Chi Square Value (0.05) #####
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value 1790
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	1.867	95% Adjusted Gamma UCL (use when n<50) 1.867
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.952	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	6.72E-13	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0654	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-3.135	Mean of logged Data 0.366
Maximum of Logged Data	1.852	SD of logged Data 0.696
Assuming Lognormal Distribution		
95% H-UCL	1.968	90% Chebyshev (MVUE) UCL 2.057
95% Chebyshev (MVUE) UCL	2.157	97.5% Chebyshev (MVUE) UCL 2.297
99% Chebyshev (MVUE) UCL	2.572	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	1.86	95% Jackknife UCL 1.86
95% Standard Bootstrap UCL	1.859	95% Bootstrap-t UCL 1.869
95% Hall's Bootstrap UCL	1.867	95% Percentile Bootstrap UCL 1.865
95% BCA Bootstrap UCL	1.873	
90% Chebyshev(Mean, Sd) UCL	1.936	95% Chebyshev(Mean, Sd) UCL 2.012
97.5% Chebyshev(Mean, Sd) UCL	2.118	99% Chebyshev(Mean, Sd) UCL 2.325
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	2.012	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***copper***7440-50-8***t***mg/kg)		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 313
		Number of Missing Observations 0
Minimum	11.3	Mean 1231
Maximum	37000	Median 405
SD	2881	Std. Error of Mean 150.6
Coefficient of Variation	2.34	Skewness 7.734
Normal GOF Test		
Shapiro Wilk Test Statistic	0.396	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.336	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1479	95% Adjusted-CLT UCL (Chen-1995) 1544
		95% Modified-t UCL (Johnson-1978) 1490
Gamma GOF Test		

A-D Test Statistic	16.62	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.805	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.165	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0497	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.676	k star (bias corrected MLE)	0.672
Theta hat (MLE)	1822	Theta star (bias corrected MLE)	1832
nu hat (MLE)	494.6	nu star (bias corrected)	491.8
MLE Mean (bias corrected)	1231	MLE Sd (bias corrected)	1502
		Approximate Chi Square Value (0.05)	441.4
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	441.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1372	95% Adjusted Gamma UCL (use when n<50)	1372
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.969	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	2.39E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0749	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.425	Mean of logged Data	6.217
Maximum of Logged Data	10.52	SD of logged Data	1.23
Assuming Lognormal Distribution			
95% H-UCL	1240	90% Chebyshev (MVUE) UCL	1334
95% Chebyshev (MVUE) UCL	1456	97.5% Chebyshev (MVUE) UCL	1625
99% Chebyshev (MVUE) UCL	1958		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1479	95% Jackknife UCL	1479
95% Standard Bootstrap UCL	1475	95% Bootstrap-t UCL	1591
95% Hall's Bootstrap UCL	1706	95% Percentile Bootstrap UCL	1479
95% BCA Bootstrap UCL	1577		
90% Chebyshev(Mean, Sd) UCL	1683	95% Chebyshev(Mean, Sd) UCL	1887
97.5% Chebyshev(Mean, Sd) UCL	2171	99% Chebyshev(Mean, Sd) UCL	2729
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1887		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***copper***7440-50-8***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
		Number of Missing Observations	0
Minimum	1.829	Mean	131.3
Maximum	5014	Median	54.55
SD	321.4	Std. Error of Mean	16.8
Coefficient of Variation	2.449	Skewness	10.84
Normal GOF Test			
Shapiro Wilk Test Statistic	0.331	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.344	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	159	95% Adjusted-CLT UCL (Chen-1995)	169.1
		95% Modified-t UCL (Johnson-1978)	160.6
Gamma GOF Test			
A-D Test Statistic	22.49	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.792	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.199	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0492	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics		
k hat (MLE)	0.861	k star (bias corrected MLE) 0.856
Theta hat (MLE)	152.4	Theta star (bias corrected MLE) 153.4
nu hat (MLE)	630.3	nu star (bias corrected) 626.5
MLE Mean (bias corrected)	131.3	MLE Sd (bias corrected) 141.9
		Approximate Chi Square Value (0.05) 569.4
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value 569.2
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	144.4	95% Adjusted Gamma UCL (use when n<50) 144.5
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.953	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	2.08E-12	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0977	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	0.604	Mean of logged Data 4.194
Maximum of Logged Data	8.52	SD of logged Data 1.015
Assuming Lognormal Distribution		
95% H-UCL	124.3	90% Chebyshev (MVUE) UCL 132.3
95% Chebyshev (MVUE) UCL	142	97.5% Chebyshev (MVUE) UCL 155.6
99% Chebyshev (MVUE) UCL	182.2	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	158.9	95% Jackknife UCL 159
95% Standard Bootstrap UCL	159.4	95% Bootstrap-t UCL 180.4
95% Hall's Bootstrap UCL	281.8	95% Percentile Bootstrap UCL 162.1
95% BCA Bootstrap UCL	170.8	
90% Chebyshev(Mean, Sd) UCL	181.7	95% Chebyshev(Mean, Sd) UCL 204.5
97.5% Chebyshev(Mean, Sd) UCL	236.2	99% Chebyshev(Mean, Sd) UCL 298.4
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	204.5	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***copper-sem***7440-50-8sem***t***umol/g)		
General Statistics		
Total Number of Observations	84	Number of Distinct Observations 84
		Number of Missing Observations 0
Minimum	0.0487	Mean 2.961
Maximum	16.1	Median 2.062
SD	2.999	Std. Error of Mean 0.327
Coefficient of Variation	1.013	Skewness 2.048
Normal GOF Test		
Shapiro Wilk Test Statistic	0.805	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	5.55E-16	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.166	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0967	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	3.505	95% Adjusted-CLT UCL (Chen-1995) 3.577
		95% Modified-t UCL (Johnson-1978) 3.518
Gamma GOF Test		
A-D Test Statistic	0.469	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.783	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0699	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.101	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	0.973	k star (bias corrected MLE) 0.946
Theta hat (MLE)	3.043	Theta star (bias corrected MLE) 3.129
nu hat (MLE)	163.5	nu star (bias corrected) 159

MLE Mean (bias corrected)	2.961	MLE Sd (bias corrected)	3.044
		Approximate Chi Square Value (0.05)	130.8
Adjusted Level of Significance	0.0471	Adjusted Chi Square Value	130.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	3.598	95% Adjusted Gamma UCL (use when n<50)	3.61
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	4.29E-06	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.13	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0967	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-3.021	Mean of logged Data	0.49
Maximum of Logged Data	2.779	SD of logged Data	1.31
Assuming Lognormal Distribution			
95% H-UCL	5.555	90% Chebyshev (MVUE) UCL	5.891
95% Chebyshev (MVUE) UCL	6.848	97.5% Chebyshev (MVUE) UCL	8.176
99% Chebyshev (MVUE) UCL	10.78		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3.499	95% Jackknife UCL	3.505
95% Standard Bootstrap UCL	3.49	95% Bootstrap-t UCL	3.631
95% Hall's Bootstrap UCL	3.664	95% Percentile Bootstrap UCL	3.512
95% BCA Bootstrap UCL	3.579		
90% Chebyshev(Mean, Sd) UCL	3.943	95% Chebyshev(Mean, Sd) UCL	4.387
97.5% Chebyshev(Mean, Sd) UCL	5.004	99% Chebyshev(Mean, Sd) UCL	6.216
Suggested UCL to Use			
95% Approximate Gamma UCL	3.598		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***cyanide***57-12-5***t***mg/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	108
Number of Detects	115	Number of Non-Detects	251
Number of Distinct Detects	68	Number of Distinct Non-Detects	55
Minimum Detect	0.37	Minimum Non-Detect	1.2
Maximum Detect	9.66	Maximum Non-Detect	9.7
Variance Detects	3.283	Percent Non-Detects	68.58%
Mean Detects	1.833	SD Detects	1.812
Median Detects	1.2	CV Detects	0.989
Skewness Detects	2.653	Kurtosis Detects	7.09
Mean of Logged Detects	0.32	SD of Logged Detects	0.687
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.644	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.268	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0826	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.376	Standard Error of Mean	0.0704
SD	1.142	95% KM (BCA) UCL	1.495
95% KM (t) UCL	1.492	95% KM (Percentile Bootstrap) UCL	1.487
95% KM (z) UCL	1.492	95% KM Bootstrap t UCL	1.508
90% KM Chebyshev UCL	1.587	95% KM Chebyshev UCL	1.683
97.5% KM Chebyshev UCL	1.816	99% KM Chebyshev UCL	2.077
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.882	Anderson-Darling GOF Test	
5% A-D Critical Value	0.766	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.169	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	8.68E-02	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.902	k star (bias corrected MLE)	1.858
Theta hat (MLE)	0.963	Theta star (bias corrected MLE)	0.986

nu hat (MLE)	437.5	nu star (bias corrected)	427.4
MLE Mean (bias corrected)	1.833	MLE Sd (bias corrected)	1.344
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.451	nu hat (KM)	1062
Approximate Chi Square Value (N/A, α)	987.6	Adjusted Chi Square Value (N/A, β)	987.4
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.48	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1.481
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.358
Maximum	9.66	Median	1.084
SD	1.236	CV	0.91
k hat (MLE)	1.479	k star (bias corrected MLE)	1.468
Theta hat (MLE)	0.918	Theta star (bias corrected MLE)	0.925
nu hat (MLE)	1082	nu star (bias corrected)	1075
MLE Mean (bias corrected)	1.358	MLE Sd (bias corrected)	1.121
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	999.8	Adjusted Chi Square Value (N/A, β)	999.5
95% Gamma Approximate UCL (use when $n \geq 50$)	1.46	95% Gamma Adjusted UCL (use when $n < 50$)	1.46
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.117	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0826	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.404	Mean in Log Scale	0.176
SD in Original Scale	1.126	SD in Log Scale	0.517
95% t UCL (assumes normality of ROS data)	1.501	95% Percentile Bootstrap UCL	1.501
95% BCA Bootstrap UCL	1.516	95% Bootstrap t UCL	1.517
95% H-UCL (Log ROS)	1.431		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.741	Mean in Log Scale	0.429
SD in Original Scale	1.124	SD in Log Scale	0.473
95% t UCL (Assumes normality)	1.838	95% H-Stat UCL	1.794
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.492	95% KM (% Bootstrap) UCL	1.487
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***cyanide***57-12-5***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	354
Number of Detects	115	Number of Non-Detects	251
Number of Distinct Detects	110	Number of Distinct Non-Detects	245
Minimum Detect	0.0461	Minimum Non-Detect	0.161
Maximum Detect	1.014	Maximum Non-Detect	5.752
Variance Detects	0.0286	Percent Non-Detects	68.58%
Mean Detects	0.18	SD Detects	0.169
Median Detects	0.126	CV Detects	0.939
Skewness Detects	2.99	Kurtosis Detects	10.24
Mean of Logged Detects	-1.969	SD of Logged Detects	0.653
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.653	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0.00E+00	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.251	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0826	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.148	Standard Error of Mean	0.00789
SD	0.116	95% KM (BCA) UCL	0.162
95% KM (t) UCL	0.161	95% KM (Percentile Bootstrap) UCL	0.161
95% KM (z) UCL	0.161	95% KM Bootstrap t UCL	0.163
90% KM Chebyshev UCL	0.172	95% KM Chebyshev UCL	0.182

97.5% KM Chebyshev UCL	0.197	99% KM Chebyshev UCL	0.226
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.408	Anderson-Darling GOF Test	
5% A-D Critical Value	0.765	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.17	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0867	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.113	k star (bias corrected MLE)	2.064
Theta hat (MLE)	0.0852	Theta star (bias corrected MLE)	0.0873
nu hat (MLE)	486.1	nu star (bias corrected)	474.7
MLE Mean (bias corrected)	0.18	MLE Sd (bias corrected)	0.125
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.638	nu hat (KM)	1199
Approximate Chi Square Value (N/A, α)	1120	Adjusted Chi Square Value (N/A, β)	1119
95% Gamma Approximate KM-UCL (use when n>=50)	0.158	95% Gamma Adjusted KM-UCL (use when n<50)	0.158
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0461	Mean	0.137
Maximum	1.014	Median	0.12
SD	0.0995	CV	0.726
k hat (MLE)	4.928	k star (bias corrected MLE)	4.889
Theta hat (MLE)	0.0278	Theta star (bias corrected MLE)	0.0281
nu hat (MLE)	3607	nu star (bias corrected)	3579
MLE Mean (bias corrected)	0.137	MLE Sd (bias corrected)	0.062
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	3441	Adjusted Chi Square Value (N/A, β)	3440
95% Gamma Approximate UCL (use when n>=50)	0.143	95% Gamma Adjusted UCL (use when n<50)	0.143
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.111	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0826	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.141	Mean in Log Scale	-2.061
SD in Original Scale	0.0986	SD in Log Scale	0.374
95% t UCL (assumes normality of ROS data)	0.149	95% Percentile Bootstrap UCL	0.149
95% BCA Bootstrap UCL	0.15	95% Bootstrap t UCL	0.151
95% H-UCL (Log ROS)	0.141		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.244	Mean in Log Scale	-1.594
SD in Original Scale	0.196	SD in Log Scale	0.592
95% t UCL (Assumes normality)	0.261	95% H-Stat UCL	0.256
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.161	95% KM (% Bootstrap) UCL	0.161
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***cyclohexane***110-82-7***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	170
Number of Detects	9	Number of Non-Detects	163
Number of Distinct Detects	9	Number of Distinct Non-Detects	161
Minimum Detect	8.00E-05	Minimum Non-Detect	0.00198
Maximum Detect	0.0706	Maximum Non-Detect	1.49
Variance Detects	5.36E-04	Percent Non-Detects	94.77%
Mean Detects	0.013	SD Detects	0.0232
Median Detects	2.70E-04	CV Detects	1.788
Skewness Detects	2.343	Kurtosis Detects	5.821
Mean of Logged Detects	-6.672	SD of Logged Detects	2.71
Normal GOF Test on Detects Only			

Shapiro Wilk Test Statistic	0.641	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.292	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00114	Standard Error of Mean	5.95E-04
SD	0.00631	95% KM (BCA) UCL	0.00235
95% KM (t) UCL	0.00212	95% KM (Percentile Bootstrap) UCL	0.00221
95% KM (z) UCL	0.00212	95% KM Bootstrap t UCL	0.00341
90% KM Chebyshev UCL	0.00292	95% KM Chebyshev UCL	0.00373
97.5% KM Chebyshev UCL	0.00485	99% KM Chebyshev UCL	0.00706
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.717	Anderson-Darling GOF Test	
5% A-D Critical Value	0.808	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.31	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.302	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.297	k star (bias corrected MLE)	0.272
Theta hat (MLE)	0.0436	Theta star (bias corrected MLE)	0.0476
nu hat (MLE)	5.346	nu star (bias corrected)	4.898
MLE Mean (bias corrected)	0.013	MLE Sd (bias corrected)	0.0248
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0324	nu hat (KM)	11.15
Approximate Chi Square Value (11.15, α)	4.674	Adjusted Chi Square Value (11.15, β)	4.638
95% Gamma Approximate KM-UCL (use when n>=50)	2.71E-03	95% Gamma Adjusted KM-UCL (use when n<50)	0.00273
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	8.00E-05	Mean	0.0102
Maximum	0.0706	Median	0.01
SD	0.00505	CV	0.498
k hat (MLE)	4.209	k star (bias corrected MLE)	4.139
Theta hat (MLE)	0.00241	Theta star (bias corrected MLE)	0.00245
nu hat (MLE)	1448	nu star (bias corrected)	1424
MLE Mean (bias corrected)	0.0102	MLE Sd (bias corrected)	0.00499
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (N/A, α)	1337	Adjusted Chi Square Value (N/A, β)	1337
95% Gamma Approximate UCL (use when n>=50)	0.0108	95% Gamma Adjusted UCL (use when n<50)	0.0108
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.845	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.271	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	8.62E-04	Mean in Log Scale	-8.458
SD in Original Scale	0.00576	SD in Log Scale	0.734
95% t UCL (assumes normality of ROS data)	0.00159	95% Percentile Bootstrap UCL	0.00168
95% BCA Bootstrap UCL	2.24E-03	95% Bootstrap t UCL	0.00314
95% H-UCL (Log ROS)	3.10E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.609	95% H-UCL (KM -Log)	4.25E-04
KM SD (logged)	1.137	95% Critical H Value (KM-Log)	2.286
KM Standard Error of Mean (logged)	0.266		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0303	Mean in Log Scale	-4.936
SD in Original Scale	0.087	SD in Log Scale	1.455
95% t UCL (Assumes normality)	0.0412	95% H-Stat UCL	0.0277
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.00212	95% KM (Percentile Bootstrap) UCL	0.00221

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***cyclohexane***110-82-7***t***ug/kg)

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	79
Number of Detects	9	Number of Non-Detects	163
Number of Distinct Detects	9	Number of Distinct Non-Detects	71
Minimum Detect	0.88	Minimum Non-Detect	22
Maximum Detect	776.9	Maximum Non-Detect	14000
Variance Detects	64667	Percent Non-Detects	94.77%
Mean Detects	142	SD Detects	254.3
Median Detects	3.4	CV Detects	1.791
Skewness Detects	2.373	Kurtosis Detects	5.969
Mean of Logged Detects	2.655	SD of Logged Detects	2.703
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.642	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.289	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	10.67	Standard Error of Mean	6.078
SD	68.72	95% KM (BCA) UCL	22.47
95% KM (t) UCL	20.73	95% KM (Percentile Bootstrap) UCL	21.45
95% KM (z) UCL	20.67	95% KM Bootstrap t UCL	43.58
90% KM Chebyshev UCL	28.91	95% KM Chebyshev UCL	37.17
97.5% KM Chebyshev UCL	48.63	99% KM Chebyshev UCL	71.15
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.685	Anderson-Darling GOF Test	
5% A-D Critical Value	0.807	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.302	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.301	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.3	k star (bias corrected MLE)	0.274
Theta hat (MLE)	473.7	Theta star (bias corrected MLE)	518.4
nu hat (MLE)	5.395	nu star (bias corrected)	4.93
MLE Mean (bias corrected)	142	MLE Sd (bias corrected)	271.3
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0241	nu hat (KM)	8.301
Approximate Chi Square Value (8.30, α)	2.91	Adjusted Chi Square Value (8.30, β)	2.883
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	30.44	95% Gamma Adjusted KM-UCL (use when $n < 50$)	30.73
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	10.29
Maximum	776.9	Median	0.01
SD	63.92	CV	6.209
k hat (MLE)	0.135	k star (bias corrected MLE)	0.137
Theta hat (MLE)	76	Theta star (bias corrected MLE)	75.16
nu hat (MLE)	46.59	nu star (bias corrected)	47.11
MLE Mean (bias corrected)	10.29	MLE Sd (bias corrected)	27.82
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (47.11, α)	32.36	Adjusted Chi Square Value (47.11, β)	32.26
95% Gamma Approximate UCL (use when $n \geq 50$)	14.99	95% Gamma Adjusted UCL (use when $n < 50$)	15.03
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.829	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.257	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.295	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	10.52	Mean in Log Scale	0.776
SD in Original Scale	63.22	SD in Log Scale	1.254
95% t UCL (assumes normality of ROS data)	18.49	95% Percentile Bootstrap UCL	19.89
95% BCA Bootstrap UCL	26.18	95% Bootstrap t UCL	39.01

95% H-UCL (Log ROS)	6		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	0.603	95% H-UCL (KM -Log)	3.449
KM SD (logged)	0.975	95% Critical H Value (KM-Log)	2.143
KM Standard Error of Mean (logged)	0.242		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	322.6	Mean in Log Scale	3.994
SD in Original Scale	967	SD in Log Scale	1.548
95% t UCL (Assumes normality)	444.5	95% H-Stat UCL	247.7
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	20.73	95% KM (Percentile Bootstrap) UCL	21.45
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***decalin, cis- & trans-***decalinc_t***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	294
Number of Detects	295	Number of Non-Detects	5
Number of Distinct Detects	289	Number of Distinct Non-Detects	5
Minimum Detect	0.0015	Minimum Non-Detect	0.0027
Maximum Detect	0.944	Maximum Non-Detect	2.57%
Variance Detects	0.00692	Percent Non-Detects	1.67%
Mean Detects	0.0318	SD Detects	0.0832
Median Detects	0.0127	CV Detects	2.613
Skewness Detects	7.7	Kurtosis Detects	69.86
Mean of Logged Detects	-4.238	SD of Logged Detects	1.069
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.322	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.358	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0516	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0314	Standard Error of Mean	0.00477
SD	0.0824	95% KM (BCA) UCL	0.0404
95% KM (t) UCL	0.0393	95% KM (Percentile Bootstrap) UCL	0.0405
95% KM (z) UCL	0.0393	95% KM Bootstrap t UCL	0.0439
90% KM Chebyshev UCL	0.0457	95% KM Chebyshev UCL	0.0522
97.5% KM Chebyshev UCL	0.0612	99% KM Chebyshev UCL	0.0789
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	15.58	Anderson-Darling GOF Test	
5% A-D Critical Value	0.797	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.153	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0548	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.756	k star (bias corrected MLE)	0.75
Theta hat (MLE)	0.0421	Theta star (bias corrected MLE)	0.0424
nu hat (MLE)	446	nu star (bias corrected)	442.8
MLE Mean (bias corrected)	0.0318	MLE Sd (bias corrected)	0.0368
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.145	nu hat (KM)	87.16
Approximate Chi Square Value (87.16, α)	66.64	Adjusted Chi Square Value (87.16, β)	66.55
95% Gamma Approximate KM-UCL (use when n>=50)	0.0411	95% Gamma Adjusted KM-UCL (use when n<50)	0.0411
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0015	Mean	0.0315
Maximum	0.944	Median	0.0122
SD	0.0826	CV	2.623
k hat (MLE)	0.76	k star (bias corrected MLE)	0.755

Theta hat (MLE)	0.0414	Theta star (bias corrected MLE)	0.0417
nu hat (MLE)	456.3	nu star (bias corrected)	453
MLE Mean (bias corrected)	0.0315	MLE Sd (bias corrected)	0.0362
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (453.04, α)	404.7	Adjusted Chi Square Value (453.04, β)	404.5
95% Gamma Approximate UCL (use when n>=50)	0.0352	95% Gamma Adjusted UCL (use when n<50)	0.0353
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0647	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0516	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0314	Mean in Log Scale	-4.257
SD in Original Scale	0.0826	SD in Log Scale	1.076
95% t UCL (assumes normality of ROS data)	0.0393	95% Percentile Bootstrap UCL	0.0395
95% BCA Bootstrap UCL	0.0417	95% Bootstrap t UCL	0.0435
95% H-UCL (Log ROS)	0.029		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0314	Mean in Log Scale	-4.256
SD in Original Scale	0.0826	SD in Log Scale	1.076
95% t UCL (Assumes normality)	0.0393	95% H-Stat UCL	0.029
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.0522		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***decalin, cis- & trans-***decalinc_t***t***ug/kg)			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	266
Number of Detects	295	Number of Non-Detects	5
Number of Distinct Detects	262	Number of Distinct Non-Detects	5
Minimum Detect	5.38	Minimum Non-Detect	0.817
Maximum Detect	10500	Maximum Non-Detect	#####
Variance Detects	1026320	Percent Non-Detects	1.67%
Mean Detects	343.5	SD Detects	1013
Median Detects	106	CV Detects	2.949
Skewness Detects	7.242	Kurtosis Detects	59.5
Mean of Logged Detects	4.679	SD of Logged Detects	1.414
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.313	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.369	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0516	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	338.3	Standard Error of Mean	58.05
SD	1004	95% KM (BCA) UCL	436.7
95% KM (t) UCL	434.1	95% KM (Percentile Bootstrap) UCL	432.8
95% KM (z) UCL	433.8	95% KM Bootstrap t UCL	473.2
90% KM Chebyshev UCL	512.5	95% KM Chebyshev UCL	591.4
97.5% KM Chebyshev UCL	700.8	99% KM Chebyshev UCL	915.9
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	12.06	Anderson-Darling GOF Test	
5% A-D Critical Value	0.818	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.128	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0556	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.541	k star (bias corrected MLE)	0.538
Theta hat (MLE)	635.1	Theta star (bias corrected MLE)	638.9
nu hat (MLE)	319.1	nu star (bias corrected)	317.2
MLE Mean (bias corrected)	343.5	MLE Sd (bias corrected)	468.5
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.114	nu hat (KM)	68.18

Approximate Chi Square Value (68.18, α)	50.17	Adjusted Chi Square Value (68.18, β)	50.1
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	459.7	95% Gamma Adjusted KM-UCL (use when $n < 50$)	460.4
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	337.8
Maximum	10500	Median	102.5
SD	1006	CV	2.977
k hat (MLE)	0.491	k star (bias corrected MLE)	0.488
Theta hat (MLE)	688.4	Theta star (bias corrected MLE)	692.2
nu hat (MLE)	294.4	nu star (bias corrected)	292.8
MLE Mean (bias corrected)	337.8	MLE Sd (bias corrected)	483.5
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (292.81, α)	254.2	Adjusted Chi Square Value (292.81, β)	254
95% Gamma Approximate UCL (use when $n \geq 50$)	389.1	95% Gamma Adjusted UCL (use when $n < 50$)	389.4
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0648	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0516	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	338.3	Mean in Log Scale	4.645
SD in Original Scale	1005	SD in Log Scale	1.439
95% t UCL (assumes normality of ROS data)	434	95% Percentile Bootstrap UCL	436.2
95% BCA Bootstrap UCL	471.6	95% Bootstrap t UCL	475.3
95% H-UCL (Log ROS)	362.2		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	338.5	Mean in Log Scale	4.646
SD in Original Scale	1005	SD in Log Scale	1.451
95% t UCL (Assumes normality)	434.3	95% H-Stat UCL	369.5
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	591.4		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***dibenzo(a,h)anthracene and dibenzo(a,c)anthracene***215-58-753-70-3***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	299
		Number of Missing Observations	0
Minimum	0.0163	Mean	0.0982
Maximum	0.413	Median	0.0822
SD	0.0595	Std. Error of Mean	0.00343
Coefficient of Variation	0.606	Skewness	2.46
Normal GOF Test			
Shapiro Wilk Test Statistic	0.78	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.138	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.104	95% Adjusted-CLT UCL (Chen-1995)	0.104
		95% Modified-t UCL (Johnson-1978)	0.104
Gamma GOF Test			
A-D Test Statistic	3.886	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0803	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0524	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.863	k star (bias corrected MLE)	3.827

Theta hat (MLE)	0.0254	Theta star (bias corrected MLE)	0.0257
nu hat (MLE)	2318	nu star (bias corrected)	2296
MLE Mean (bias corrected)	0.0982	MLE Sd (bias corrected)	0.0502
		Approximate Chi Square Value (0.05)	2186
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	2185
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.103	95% Adjusted Gamma UCL (use when n<50)	0.103
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.978	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.11	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0545	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-4.12	Mean of logged Data	-2.456
Maximum of Logged Data	-0.885	SD of logged Data	0.502
Assuming Lognormal Distribution			
95% H-UCL	0.103	90% Chebyshev (MVUE) UCL	0.106
95% Chebyshev (MVUE) UCL	0.11	97.5% Chebyshev (MVUE) UCL	0.116
99% Chebyshev (MVUE) UCL	0.127		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.104	95% Jackknife UCL	0.104
95% Standard Bootstrap UCL	0.104	95% Bootstrap-t UCL	0.104
95% Hall's Bootstrap UCL	0.104	95% Percentile Bootstrap UCL	0.104
95% BCA Bootstrap UCL	0.104		
90% Chebyshev(Mean, Sd) UCL	0.108	95% Chebyshev(Mean, Sd) UCL	0.113
97.5% Chebyshev(Mean, Sd) UCL	0.12	99% Chebyshev(Mean, Sd) UCL	0.132
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.113		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***dibenzo(a,h)anthracene and dibenzo(a,c)anthracene***215-58-753-70-3***t***ug/kg)			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	240
		Number of Missing Observations	0
Minimum	30.4	Mean	852
Maximum	7920	Median	696.5
SD	775.3	Std. Error of Mean	44.76
Coefficient of Variation	0.91	Skewness	3.837
Normal GOF Test			
Shapiro Wilk Test Statistic	0.731	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.165	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	925.8	95% Adjusted-CLT UCL (Chen-1995)	936.2
		95% Modified-t UCL (Johnson-1978)	927.5
Gamma GOF Test			
A-D Test Statistic	1.568	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.768	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0536	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0529	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.805	k star (bias corrected MLE)	1.789
Theta hat (MLE)	472.1	Theta star (bias corrected MLE)	476.3
nu hat (MLE)	1083	nu star (bias corrected)	1073
MLE Mean (bias corrected)	852	MLE Sd (bias corrected)	637
		Approximate Chi Square Value (0.05)	998.2
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	997.9

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	916	95% Adjusted Gamma UCL (use when n<50)	916.4
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.981	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.282	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0638	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.414	Mean of logged Data	6.446
Maximum of Logged Data	8.977	SD of logged Data	0.8
Assuming Lognormal Distribution			
95% H-UCL	950.5	90% Chebyshev (MVUE) UCL	1003
95% Chebyshev (MVUE) UCL	1065	97.5% Chebyshev (MVUE) UCL	1152
99% Chebyshev (MVUE) UCL	1321		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	925.6	95% Jackknife UCL	925.8
95% Standard Bootstrap UCL	925.2	95% Bootstrap-t UCL	936.7
95% Hall's Bootstrap UCL	940.1	95% Percentile Bootstrap UCL	926.6
95% BCA Bootstrap UCL	936.2		
90% Chebyshev(Mean, Sd) UCL	986.3	95% Chebyshev(Mean, Sd) UCL	1047
97.5% Chebyshev(Mean, Sd) UCL	1132	99% Chebyshev(Mean, Sd) UCL	1297
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1047		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***dibenzo(a,h)anthracene***53-70-3***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	196	Number of Distinct Observations	196
Number of Detects	175	Number of Non-Detects	21
Number of Distinct Detects	175	Number of Distinct Non-Detects	21
Minimum Detect	0.0127	Minimum Non-Detect	0.00704
Maximum Detect	4.931	Maximum Non-Detect	1.209
Variance Detects	0.147	Percent Non-Detects	10.71%
Mean Detects	0.137	SD Detects	0.384
Median Detects	0.0684	CV Detects	2.796
Skewness Detects	11.41	Kurtosis Detects	141.9
Mean of Logged Detects	-2.543	SD of Logged Detects	0.86
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.243	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.373	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.067	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.133	Standard Error of Mean	0.0261
SD	0.363	95% KM (BCA) UCL	0.186
95% KM (t) UCL	0.176	95% KM (Percentile Bootstrap) UCL	0.179
95% KM (z) UCL	0.176	95% KM Bootstrap t UCL	0.253
90% KM Chebyshev UCL	0.212	95% KM Chebyshev UCL	0.247
97.5% KM Chebyshev UCL	0.296	99% KM Chebyshev UCL	0.393
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.97	Anderson-Darling GOF Test	
5% A-D Critical Value	0.783	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.151	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0721	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.031	k star (bias corrected MLE)	1.017
Theta hat (MLE)	0.133	Theta star (bias corrected MLE)	0.135
nu hat (MLE)	361	nu star (bias corrected)	356.1
MLE Mean (bias corrected)	0.137	MLE Sd (bias corrected)	0.136

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.134 nu hat (KM)	52.64
Approximate Chi Square Value (52.64, α)	36.97 Adjusted Chi Square Value (52.64, β)	36.88
95% Gamma Approximate KM-UCL (use when n>=50)	0.19 95% Gamma Adjusted KM-UCL (use when n<50)	0.19
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	0.129
Maximum	4.931 Median	0.0612
SD	0.363 CV	2.825
k hat (MLE)	1.075 k star (bias corrected MLE)	1.062
Theta hat (MLE)	0.12 Theta star (bias corrected MLE)	0.121
nu hat (MLE)	421.3 nu star (bias corrected)	#####
MLE Mean (bias corrected)	0.129 MLE Sd (bias corrected)	0.125
	Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (416.21, α)	369.9 Adjusted Chi Square Value (416.21, β)	369.6
95% Gamma Approximate UCL (use when n>=50)	0.145 95% Gamma Adjusted UCL (use when n<50)	0.145
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0816 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.067 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.13 Mean in Log Scale	-2.559
SD in Original Scale	0.363 SD in Log Scale	0.83
95% t UCL (assumes normality of ROS data)	0.173 95% Percentile Bootstrap UCL	0.18
95% BCA Bootstrap UCL	0.21 95% Bootstrap t UCL	0.262
95% H-UCL (Log ROS)	0.123	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.164 Mean in Log Scale	-2.394
SD in Original Scale	0.373 SD in Log Scale	0.98
95% t UCL (Assumes normality)	0.208 95% H-Stat UCL	17.20%
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.186	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***dibenzo(a,h)anthracene***53-70-3***t***ug/kg)		
General Statistics		
Total Number of Observations	196 Number of Distinct Observations	115
Number of Detects	175 Number of Non-Detects	21
Number of Distinct Detects	96 Number of Distinct Non-Detects	20
Minimum Detect	45 Minimum Non-Detect	100
Maximum Detect	22000 Maximum Non-Detect	14650
Variance Detects	4339727 Percent Non-Detects	10.71%
Mean Detects	1118 SD Detects	2083
Median Detects	500 CV Detects	1.864
Skewness Detects	6.772 Kurtosis Detects	60.29
Mean of Logged Detects	6.352 SD of Logged Detects	1.097
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.458 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.303 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.067 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1091 Standard Error of Mean	145.2
SD	1995 95% KM (BCA) UCL	1389
95% KM (t) UCL	1331 95% KM (Percentile Bootstrap) UCL	1344
95% KM (z) UCL	1330 95% KM Bootstrap t UCL	1481
90% KM Chebyshev UCL	1527 95% KM Chebyshev UCL	1724
97.5% KM Chebyshev UCL	1998 99% KM Chebyshev UCL	2536
Gamma GOF Tests on Detected Observations Only		

A-D Test Statistic	4.582	Anderson-Darling GOF Test	
5% A-D Critical Value	0.79	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.117	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0725	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.879	k star (bias corrected MLE)	0.867
Theta hat (MLE)	1272	Theta star (bias corrected MLE)	1289
nu hat (MLE)	307.5	nu star (bias corrected)	303.6
MLE Mean (bias corrected)	1118	MLE Sd (bias corrected)	1200

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.299	nu hat (KM)	117.2
Approximate Chi Square Value (117.20, α)	93.21	Adjusted Chi Square Value (117.20, β)	93.05
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1372	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1374

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1051
Maximum	22000	Median	503.3
SD	1979	CV	1.883
k hat (MLE)	0.859	k star (bias corrected MLE)	0.849
Theta hat (MLE)	1223	Theta star (bias corrected MLE)	1237
nu hat (MLE)	336.7	nu star (bias corrected)	332.9
MLE Mean (bias corrected)	1051	MLE Sd (bias corrected)	1140
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (332.89, α)	291.6	Adjusted Chi Square Value (332.89, β)	291.3
95% Gamma Approximate UCL (use when $n \geq 50$)	1199	95% Gamma Adjusted UCL (use when $n < 50$)	1200

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0668	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.067	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1055	Mean in Log Scale	6.337
SD in Original Scale	1977	SD in Log Scale	1.049
95% t UCL (assumes normality of ROS data)	1289	95% Percentile Bootstrap UCL	1297
95% BCA Bootstrap UCL	1426	95% Bootstrap t UCL	1435
95% H-UCL (Log ROS)	1157		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	6.335	95% H-UCL (KM -Log)	1228
KM SD (logged)	1.096	95% Critical H Value (KM-Log)	2.261
KM Standard Error of Mean (logged)	0.0824		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1423	Mean in Log Scale	6.538
SD in Original Scale	2210	SD in Log Scale	1.211
95% t UCL (Assumes normality)	1683	95% H-Stat UCL	1765
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	1724		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***dibenzofuran***132-64-9***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	364
Number of Detects	225	Number of Non-Detects	141
Number of Distinct Detects	223	Number of Distinct Non-Detects	141
Minimum Detect	0.00604	Minimum Non-Detect	0.0462
Maximum Detect	4.931	Maximum Non-Detect	6.045
Variance Detects	0.152	Percent Non-Detects	38.52%
Mean Detects	0.0788	SD Detects	0.39
Median Detects	0.0231	CV Detects	4.949
Skewness Detects	10.77	Kurtosis Detects	123.1
Mean of Logged Detects	-3.567	SD of Logged Detects	0.944

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.165	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.426	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0591	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0624	Standard Error of Mean 0.0166
SD	0.311	95% KM (BCA) UCL 0.1
95% KM (t) UCL	0.0897	95% KM (Percentile Bootstrap) UCL 0.0914
95% KM (z) UCL	0.0896	95% KM Bootstrap t UCL 0.18
90% KM Chebyshev UCL	0.112	95% KM Chebyshev UCL 0.135
97.5% KM Chebyshev UCL	0.166	99% KM Chebyshev UCL 0.227
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.44E+28	Anderson-Darling GOF Test
5% A-D Critical Value	0.811	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.293	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0638	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.602	k star (bias corrected MLE) 0.597
Theta hat (MLE)	0.131	Theta star (bias corrected MLE) 0.132
nu hat (MLE)	270.7	nu star (bias corrected) 268.5
MLE Mean (bias corrected)	0.0788	MLE Sd (bias corrected) 0.102
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0403	nu hat (KM) 29.48
Approximate Chi Square Value (29.48, α)	18.08	Adjusted Chi Square Value (29.48, β) 18.05
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.102	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.102
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00604	Mean 0.0523
Maximum	4.931	Median 0.014
SD	0.308	CV 5.877
k hat (MLE)	0.607	k star (bias corrected MLE) 0.604
Theta hat (MLE)	0.0862	Theta star (bias corrected MLE) 0.0867
nu hat (MLE)	444.2	nu star (bias corrected) 441.9
MLE Mean (bias corrected)	0.0523	MLE Sd (bias corrected) 0.0673
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (441.88, α)	394.1	Adjusted Chi Square Value (441.88, β) 394
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0587	95% Gamma Adjusted UCL (use when $n < 50$) 0.0587
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.124	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0591	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0587	Mean in Log Scale -3.591
SD in Original Scale	0.307	SD in Log Scale 0.741
95% t UCL (assumes normality of ROS data)	0.0851	95% Percentile Bootstrap UCL 0.0877
95% BCA Bootstrap UCL	0.106	95% Bootstrap t UCL 0.193
95% H-UCL (Log ROS)	0.0391	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.246	Mean in Log Scale -2.802
SD in Original Scale	0.604	SD in Log Scale 1.442
95% t UCL (Assumes normality)	0.298	95% H-Stat UCL 0.208
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.1	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***dibenzofuran***132-64-9***t***ug/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	295
Number of Detects	225	Number of Non-Detects	141
Number of Distinct Detects	185	Number of Distinct Non-Detects	115
Minimum Detect	17.7	Minimum Non-Detect	112
Maximum Detect	31710	Maximum Non-Detect	71570
Variance Detects	6789471	Percent Non-Detects	38.52%
Mean Detects	590.3	SD Detects	2606
Median Detects	170	CV Detects	4.414
Skewness Detects	10.21	Kurtosis Detects	111.2
Mean of Logged Detects	5.298	SD of Logged Detects	1.098
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.193	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.413	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0591	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	476.6	Standard Error of Mean	116.7
SD	2133	95% KM (BCA) UCL	712.3
95% KM (t) UCL	669	95% KM (Percentile Bootstrap) UCL	700
95% KM (z) UCL	668.5	95% KM Bootstrap t UCL	1076
90% KM Chebyshev UCL	826.6	95% KM Chebyshev UCL	985.2
97.5% KM Chebyshev UCL	1205	99% KM Chebyshev UCL	1638
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	22.49	Anderson-Darling GOF Test	
5% A-D Critical Value	0.814	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.24	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0639	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.574	k star (bias corrected MLE)	0.57
Theta hat (MLE)	1028	Theta star (bias corrected MLE)	1036
nu hat (MLE)	258.5	nu star (bias corrected)	256.4
MLE Mean (bias corrected)	590.3	MLE Sd (bias corrected)	782.1
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0499	nu hat (KM)	36.54
Approximate Chi Square Value (36.54, α)	23.71	Adjusted Chi Square Value (36.54, β)	23.67
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	734.6	95% Gamma Adjusted KM-UCL (use when $n < 50$)	735.9
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	389
Maximum	31710	Median	99.5
SD	2061	CV	5.297
k hat (MLE)	0.188	k star (bias corrected MLE)	0.188
Theta hat (MLE)	2069	Theta star (bias corrected MLE)	2066
nu hat (MLE)	137.6	nu star (bias corrected)	137.8
MLE Mean (bias corrected)	389	MLE Sd (bias corrected)	896.5
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (137.83, α)	111.7	Adjusted Chi Square Value (137.83, β)	111.6
95% Gamma Approximate UCL (use when $n \geq 50$)	480	95% Gamma Adjusted UCL (use when $n < 50$)	480.4
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0847	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0591	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	435.2	Mean in Log Scale	5.256
SD in Original Scale	2051	SD in Log Scale	0.881
95% t UCL (assumes normality of ROS data)	612	95% Percentile Bootstrap UCL	626.4
95% BCA Bootstrap UCL	739	95% Bootstrap t UCL	1176
95% H-UCL (Log ROS)	310.7		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2338	Mean in Log Scale	6.126
SD in Original Scale	5909	SD in Log Scale	1.618
95% t UCL (Assumes normality)	2847	95% H-Stat UCL	2130

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL985.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***dibenzothiophene***132-65-0***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	300	Number of Distinct Observations	296
		Number of Missing Observations	0
Minimum	0.00567	Mean	0.0528
Maximum	0.694	Median	0.0339
SD	0.0773	Std. Error of Mean	0.00446
Coefficient of Variation	1.463	Skewness	5.391

Normal GOF Test			
Shapiro Wilk Test Statistic	0.42	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.308	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.0602	95% Adjusted-CLT UCL (Chen-1995)	0.0616
		95% Modified-t UCL (Johnson-1978)	0.0604

Gamma GOF Test			
A-D Test Statistic	23.24	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.77	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.203	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.053	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	1.628	k star (bias corrected MLE)	1.614
Theta hat (MLE)	0.0324	Theta star (bias corrected MLE)	0.0327
nu hat (MLE)	976.8	nu star (bias corrected)	968.3
MLE Mean (bias corrected)	0.0528	MLE Sd (bias corrected)	0.0416
		Approximate Chi Square Value (0.05)	897.1
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	896.8

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.057	95% Adjusted Gamma UCL (use when n<50)	0.057

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.883	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.123	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	-5.173	Mean of logged Data	-3.279
Maximum of Logged Data	-0.365	SD of logged Data	0.67

Assuming Lognormal Distribution			
95% H-UCL	0.0508	90% Chebyshev (MVUE) UCL	0.0531
95% Chebyshev (MVUE) UCL	0.0559	97.5% Chebyshev (MVUE) UCL	0.0597
99% Chebyshev (MVUE) UCL	0.0671		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs			
95% CLT UCL	0.0601	95% Jackknife UCL	0.0602
95% Standard Bootstrap UCL	0.0601	95% Bootstrap-t UCL	0.0629
95% Hall's Bootstrap UCL	0.0622	95% Percentile Bootstrap UCL	0.0608
95% BCA Bootstrap UCL	0.0621		
90% Chebyshev(Mean, Sd) UCL	0.0662	95% Chebyshev(Mean, Sd) UCL	0.0723
97.5% Chebyshev(Mean, Sd) UCL	0.0807	99% Chebyshev(Mean, Sd) UCL	0.0972

Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL		0.0723	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***dibenzothiophene***132-65-0***t***ug/kg)			
General Statistics			
Total Number of Observations	300	Number of Distinct Observations	241
		Number of Missing Observations	0
Minimum	21.2	Mean	504.4
Maximum	9860	Median	259
SD	1061	Std. Error of Mean	61.24
Coefficient of Variation	2.103	Skewness	6.171
Normal GOF Test			
Shapiro Wilk Test Statistic	0.364	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.325	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	605.5	95% Adjusted-CLT UCL (Chen-1995)	628.5
		95% Modified-t UCL (Johnson-1978)	609.1
Gamma GOF Test			
A-D Test Statistic	17.29	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.786	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.176	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0538	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.965	k star (bias corrected MLE)	0.958
Theta hat (MLE)	522.5	Theta star (bias corrected MLE)	526.5
nu hat (MLE)	579.3	nu star (bias corrected)	574.8
MLE Mean (bias corrected)	504.4	MLE Sd (bias corrected)	515.3
		Approximate Chi Square Value (0.05)	520.2
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	520
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	557.4	95% Adjusted Gamma UCL (use when n<50)	557.6
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	8.63E-13	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0703	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0512	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.054	Mean of logged Data	5.623
Maximum of Logged Data	9.196	SD of logged Data	0.924
Assuming Lognormal Distribution			
95% H-UCL	474.1	90% Chebyshev (MVUE) UCL	503.9
95% Chebyshev (MVUE) UCL	540.4	97.5% Chebyshev (MVUE) UCL	591
99% Chebyshev (MVUE) UCL	690.4		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	605.2	95% Jackknife UCL	605.5
95% Standard Bootstrap UCL	602.8	95% Bootstrap-t UCL	645.5
95% Hall's Bootstrap UCL	627.1	95% Percentile Bootstrap UCL	615.4
95% BCA Bootstrap UCL	634.6		
90% Chebyshev(Mean, Sd) UCL	688.2	95% Chebyshev(Mean, Sd) UCL	771.4
97.5% Chebyshev(Mean, Sd) UCL	886.9	99% Chebyshev(Mean, Sd) UCL	1114
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL		771.4	

and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.
For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***dichloromethane (methylene chloride)***75-09-2***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	172	Number of Distinct Observations 169
Number of Detects	10	Number of Non-Detects 162
Number of Distinct Detects	10	Number of Distinct Non-Detects 159
Minimum Detect	2.60E-04	Minimum Non-Detect 0.00198
Maximum Detect	0.628	Maximum Non-Detect 0.461
Variance Detects	0.0391	Percent Non-Detects 94.19%
Mean Detects	0.0648	SD Detects 0.198
Median Detects	0.00195	CV Detects 3.053
Skewness Detects	3.162	Kurtosis Detects 9.998
Mean of Logged Detects	-5.883	SD of Logged Detects 2.147
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.373	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.517	Lilliefors GOF Test
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00501	Standard Error of Mean 0.00384
SD	0.0476	95% KM (BCA) UCL 0.0127
95% KM (t) UCL	0.0114	95% KM (Percentile Bootstrap) UCL 0.0123
95% KM (z) UCL	0.0113	95% KM Bootstrap t UCL 0.0758
90% KM Chebyshev UCL	0.0165	95% KM Chebyshev UCL 0.0217
97.5% KM Chebyshev UCL	0.029	99% KM Chebyshev UCL 0.0432
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.096	Anderson-Darling GOF Test
5% A-D Critical Value	0.843	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.452	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.292	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.229	k star (bias corrected MLE) 0.227
Theta hat (MLE)	0.283	Theta star (bias corrected MLE) 0.285
nu hat (MLE)	4.58	nu star (bias corrected) 4.539
MLE Mean (bias corrected)	0.0648	MLE Sd (bias corrected) 0.136
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0111	nu hat (KM) 3.802
Approximate Chi Square Value (3.80, α)	0.645	Adjusted Chi Square Value (3.80, β) 0.635
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0295	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.03
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2.60E-04	Mean 0.0132
Maximum	0.628	Median 0.01
SD	0.0472	CV 3.577
k hat (MLE)	1.571	k star (bias corrected MLE) 154.80%
Theta hat (MLE)	0.00839	Theta star (bias corrected MLE) 0.00852
nu hat (MLE)	540.5	nu star (bias corrected) 532.5
MLE Mean (bias corrected)	0.0132	MLE Sd (bias corrected) 0.0106
		Adjusted Level of Significance (β) 0.0486
Approximate Chi Square Value (532.45, α)	479.9	Adjusted Chi Square Value (532.45, β) 479.5
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0146	95% Gamma Adjusted UCL (use when $n < 50$) 0.0146
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.795	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.269	Lilliefors GOF Test
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0046	Mean in Log Scale -6.969
SD in Original Scale	0.0478	SD in Log Scale 0.574
95% t UCL (assumes normality of ROS data)	0.0106	95% Percentile Bootstrap UCL 0.0119
95% BCA Bootstrap UCL	0.0192	95% Bootstrap t UCL 0.62
95% H-UCL (Log ROS)	0.0012	

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-6.879	95% H-UCL (KM -Log)	0.00203
KM SD (logged)	1.011	95% Critical H Value (KM-Log)	2.174
KM Standard Error of Mean (logged)	0.345		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0203	Mean in Log Scale	-5.423
SD in Original Scale	0.0591	SD in Log Scale	1.445
95% t UCL (Assumes normality)	0.0277	95% H-Stat UCL	0.0167
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use	
97.5% KM (Chebyshev) UCL	0.029

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***dichloromethane (methylene chloride)***75-09-2***t***ug/kg)

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	63
Number of Detects	10	Number of Non-Detects	162
Number of Distinct Detects	10	Number of Distinct Non-Detects	57
Minimum Detect	3.2	Minimum Non-Detect	15
Maximum Detect	5900	Maximum Non-Detect	5800
Variance Detects	3459924	Percent Non-Detects	94.19%
Mean Detects	606.3	SD Detects	1860
Median Detects	15.15	CV Detects	3.068
Skewness Detects	3.162	Kurtosis Detects	9.998
Mean of Logged Detects	3.058	SD of Logged Detects	2.212

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.373	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	5.18E-01	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	42.16	Standard Error of Mean	36.04
SD	448	95% KM (BCA) UCL	112.4
95% KM (t) UCL	101.8	95% KM (Percentile Bootstrap) UCL	110.5
95% KM (z) UCL	101.5	95% KM Bootstrap t UCL	1203
90% KM Chebyshev UCL	150.3	95% KM Chebyshev UCL	199.3
97.5% KM Chebyshev UCL	267.3	99% KM Chebyshev UCL	400.8

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.086	Anderson-Darling GOF Test	
5% A-D Critical Value	0.848	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.446	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.293	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.217	k star (bias corrected MLE)	0.219
Theta hat (MLE)	2795	Theta star (bias corrected MLE)	2775
nu hat (MLE)	4.339	nu star (bias corrected)	4.37
MLE Mean (bias corrected)	606.3	MLE Sd (bias corrected)	1297

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.00886	nu hat (KM)	3.047
Approximate Chi Square Value (3.05, α)	0.386	Adjusted Chi Square Value (3.05, β)	0.38
95% Gamma Approximate KM-UCL (use when n>=50)	332.5	95% Gamma Adjusted KM-UCL (use when n<50)	338.4
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	42.29
Maximum	5900	Median	0.01
SD	451.6	CV	10.68
k hat (MLE)	0.106	k star (bias corrected MLE)	0.108
Theta hat (MLE)	397.2	Theta star (bias corrected MLE)	389.8

nu hat (MLE)	36.62	nu star (bias corrected)	37.32
MLE Mean (bias corrected)	42.29	MLE Sd (bias corrected)	128.4
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (37.32, α)	24.33	Adjusted Chi Square Value (37.32, β)	24.24
95% Gamma Approximate UCL (use when $n \geq 50$)	64.85	95% Gamma Adjusted UCL (use when $n < 50$)	65.09
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.77	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.842	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.253	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.28	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	42.68	Mean in Log Scale	1.803
SD in Original Scale	449.3	SD in Log Scale	1.01
95% t UCL (assumes normality of ROS data)	99.34	95% Percentile Bootstrap UCL	111
95% BCA Bootstrap UCL	179.4	95% Bootstrap t UCL	2236
95% H-UCL (Log ROS)	11.96		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	1.846	95% H-UCL (KM -Log)	10.08
KM SD (logged)	0.821	95% Critical H Value (KM-Log)	2.02
KM Standard Error of Mean (logged)	0.191		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	213	Mean in Log Scale	3.507
SD in Original Scale	613	SD in Log Scale	1.592
95% t UCL (Assumes normality)	290.3	95% H-Stat UCL	165.3
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	267.3		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***dichlorprop***120-36-5***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	161	Number of Distinct Observations	160
Number of Detects	39	Number of Non-Detects	122
Number of Distinct Detects	39	Number of Distinct Non-Detects	121
Minimum Detect	0.00227	Minimum Non-Detect	0.00847
Maximum Detect	0.031	Maximum Non-Detect	0.0763
Variance Detects	5.14E-05	Percent Non-Detects	75.78%
Mean Detects	0.012	SD Detects	0.00717
Median Detects	0.00971	CV Detects	0.596
Skewness Detects	1.10E+00	Kurtosis Detects	0.641
Mean of Logged Detects	-4.589	SD of Logged Detects	0.6
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.896	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.14	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.142	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0111	Standard Error of Mean	9.09E-04
SD	0.00625	95% KM (BCA) UCL	0.0127
95% KM (t) UCL	0.0126	95% KM (Percentile Bootstrap) UCL	0.0126
95% KM (z) UCL	0.0126	95% KM Bootstrap t UCL	0.0127
90% KM Chebyshev UCL	0.0138	95% KM Chebyshev UCL	0.0151
97.5% KM Chebyshev UCL	0.0168	99% KM Chebyshev UCL	0.0201
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.318	Anderson-Darling GOF Test	
5% A-D Critical Value	0.754	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0861	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.142	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.119	k star (bias corrected MLE)	2.897

Theta hat (MLE)	0.00386	Theta star (bias corrected MLE)	0.00416
nu hat (MLE)	243.3	nu star (bias corrected)	225.9
MLE Mean (bias corrected)	0.012	MLE Sd (bias corrected)	0.00707
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	3.145	nu hat (KM)	1013
Approximate Chi Square Value (N/A, α)	940	Adjusted Chi Square Value (N/A, β)	939.3
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.012	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.012
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00227	Mean	0.0105
Maximum	0.031	Median	0.01
SD	0.00361	CV	0.343
k hat (MLE)	11.46	k star (bias corrected MLE)	11.25
Theta hat (MLE)	9.17E-04	Theta star (bias corrected MLE)	9.34E-04
nu hat (MLE)	3691	nu star (bias corrected)	3623
MLE Mean (bias corrected)	0.0105	MLE Sd (bias corrected)	0.00313
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (N/A, α)	3485	Adjusted Chi Square Value (N/A, β)	3483
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0109	95% Gamma Adjusted UCL (use when $n < 50$)	0.0109
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.983	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.939	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0563	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.142	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00997	Mean in Log Scale	-4.657
SD in Original Scale	0.00371	SD in Log Scale	0.299
95% t UCL (assumes normality of ROS data)	0.0105	95% Percentile Bootstrap UCL	0.0105
95% BCA Bootstrap UCL	0.0105	95% Bootstrap t UCL	0.0106
95% H-UCL (Log ROS)	0.0103		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-4.654	95% H-UCL (KM -Log)	0.0121
KM SD (logged)	0.563	95% Critical H Value (KM-Log)	1.845
KM Standard Error of Mean (logged)	0.0875		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0183	Mean in Log Scale	-4.117
SD in Original Scale	0.00794	SD in Log Scale	0.517
95% t UCL (Assumes normality)	0.0193	95% H-Stat UCL	0.0201
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0126	95% KM (Percentile Bootstrap) UCL	0.0126
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***dichlorprop***120-36-5***t***ug/kg)			
General Statistics			
Total Number of Observations	161	Number of Distinct Observations	79
Number of Detects	39	Number of Non-Detects	122
Number of Distinct Detects	32	Number of Distinct Non-Detects	52
Minimum Detect	31	Minimum Non-Detect	120
Maximum Detect	440	Maximum Non-Detect	520
Variance Detects	6319	Percent Non-Detects	75.78%
Mean Detects	101.3	SD Detects	79.49
Median Detects	80	CV Detects	0.785
Skewness Detects	2.506	Kurtosis Detects	8.232
Mean of Logged Detects	4.401	SD of Logged Detects	0.644
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.754	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.225	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.142	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	88.46	Standard Error of Mean	7.596
SD	56.26	95% KM (BCA) UCL	101.1
95% KM (t) UCL	101	95% KM (Percentile Bootstrap) UCL	101.5
95% KM (z) UCL	101	95% KM Bootstrap t UCL	102.4
90% KM Chebyshev UCL	111.2	95% KM Chebyshev UCL	121.6
97.5% KM Chebyshev UCL	135.9	99% KM Chebyshev UCL	164

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.755	Anderson-Darling GOF Test	
5% A-D Critical Value	0.757	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.141	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.143	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.454	k star (bias corrected MLE)	2.282
Theta hat (MLE)	41.28	Theta star (bias corrected MLE)	44.39
nu hat (MLE)	191.4	nu star (bias corrected)	178
MLE Mean (bias corrected)	101.3	MLE Sd (bias corrected)	67.06

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.472	nu hat (KM)	795.9
Approximate Chi Square Value (795.94, α)	731.5	Adjusted Chi Square Value (795.94, β)	730.9
95% Gamma Approximate KM-UCL (use when n>=50)	96.26	95% Gamma Adjusted KM-UCL (use when n<50)	96.33

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	18.37	Mean	84.84
Maximum	440	Median	76.54
SD	49.28	CV	0.581
k hat (MLE)	4.038	k star (bias corrected MLE)	3.967
Theta hat (MLE)	21.01	Theta star (bias corrected MLE)	21.39
nu hat (MLE)	1300	nu star (bias corrected)	1277
MLE Mean (bias corrected)	84.84	MLE Sd (bias corrected)	42.6
		Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (N/A, α)	1195	Adjusted Chi Square Value (N/A, β)	1195
95% Gamma Approximate UCL (use when n>=50)	90.66	95% Gamma Adjusted UCL (use when n<50)	90.71

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.955	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.939	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0934	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.142	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	83.4	Mean in Log Scale	4.322
SD in Original Scale	46.22	SD in Log Scale	0.431
95% t UCL (assumes normality of ROS data)	89.43	95% Percentile Bootstrap UCL	89.48
95% BCA Bootstrap UCL	91.62	95% Bootstrap t UCL	90.9
95% H-UCL (Log ROS)	87.83		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.319	95% H-UCL (KM -Log)	95.6
KM SD (logged)	0.564	95% Critical H Value (KM-Log)	1.845
KM Standard Error of Mean (logged)	0.087		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	136.5	Mean in Log Scale	4.822
SD in Original Scale	56.22	SD in Log Scale	0.464
95% t UCL (Assumes normality)	143.8	95% H-Stat UCL	147.8
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	101	95% GROS Approximate Gamma UCL	90.66
95% Approximate Gamma KM-UCL	96.26		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***dieldrin***60-57-1***t***mg/kg (at 1% toc))

General Statistics

Total Number of Observations	365	Number of Distinct Observations	357
Number of Detects	304	Number of Non-Detects	61
Number of Distinct Detects	303	Number of Distinct Non-Detects	56
Minimum Detect	6.00E-05	Minimum Non-Detect	2.00E-05
Maximum Detect	0.0239	Maximum Non-Detect	0.0142
Variance Detects	7.30E-06	Percent Non-Detects	16.71%
Mean Detects	0.00219	SD Detects	0.0027
Median Detects	0.00129	CV Detects	1.236
Skewness Detects	3.254	Kurtosis Detects	16.52
Mean of Logged Detects	-6.706	SD of Logged Detects	1.117

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.7	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.216	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0508	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.00195	Standard Error of Mean	1.38E-04
SD	0.00259	95% KM (BCA) UCL	0.00218
95% KM (t) UCL	0.00218	95% KM (Percentile Bootstrap) UCL	0.00217
95% KM (z) UCL	0.00218	95% KM Bootstrap t UCL	0.0022
90% KM Chebyshev UCL	0.00236	95% KM Chebyshev UCL	0.00255
97.5% KM Chebyshev UCL	0.00281	99% KM Chebyshev UCL	0.00332

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.835	Anderson-Darling GOF Test	
5% A-D Critical Value	0.784	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0772	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0534	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.995	k star (bias corrected MLE)	0.987
Theta hat (MLE)	0.0022	Theta star (bias corrected MLE)	0.00222
nu hat (MLE)	604.7	nu star (bias corrected)	600.1
MLE Mean (bias corrected)	0.00219	MLE Sd (bias corrected)	0.0022

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.569	nu hat (KM)	415.5
Approximate Chi Square Value (415.49, α)	369.2	Adjusted Chi Square Value (415.49, β)	369.1
95% Gamma Approximate KM-UCL (use when n>=50)	0.00219	95% Gamma Adjusted KM-UCL (use when n<50)	0.0022

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	6.00E-05	Mean	0.00349
Maximum	0.0239	Median	0.00169
SD	0.00382	CV	1.094
k hat (MLE)	0.845	k star (bias corrected MLE)	0.839
Theta hat (MLE)	0.00414	Theta star (bias corrected MLE)	0.00416
nu hat (MLE)	616.5	nu star (bias corrected)	612.8
MLE Mean (bias corrected)	0.00349	MLE Sd (bias corrected)	0.00381
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (612.75, α)	556.3	Adjusted Chi Square Value (612.75, β)	556.1
95% Gamma Approximate UCL (use when n>=50)	0.00385	95% Gamma Adjusted UCL (use when n<50)	0.00385

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0265	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0508	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0019	Mean in Log Scale	-6.94
SD in Original Scale	0.00255	SD in Log Scale	1.222
95% t UCL (assumes normality of ROS data)	0.00212	95% Percentile Bootstrap UCL	0.00212
95% BCA Bootstrap UCL	0.00214	95% Bootstrap t UCL	0.00215
95% H-UCL (Log ROS)	0.00237		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed

KM Mean (logged)	-7.084	95% H-UCL (KM -Log)	0.00354
KM SD (logged)	1.564	95% Critical H Value (KM-Log)	2.645
KM Standard Error of Mean (logged)	0.0857		

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.00217	Mean in Log Scale -6.93
SD in Original Scale	0.00264	SD in Log Scale 1.533
95% t UCL (Assumes normality)	0.0024	95% H-Stat UCL 0.0039
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use	
95% KM (Chebyshev) UCL	0.00255

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***dieldrin***60-57-1***t***ug/kg)

General Statistics		
Total Number of Observations	365	Number of Distinct Observations #####
Number of Detects	304	Number of Non-Detects 61
Number of Distinct Detects	259	Number of Distinct Non-Detects 49
Minimum Detect	0.2	Minimum Non-Detect 0.18
Maximum Detect	280	Maximum Non-Detect 123.4
Variance Detects	1032	Percent Non-Detects 16.71%
Mean Detects	22.59	SD Detects 32.13
Median Detects	12.05	CV Detects 1.422
Skewness Detects	3.525	Kurtosis Detects 18.55
Mean of Logged Detects	2.238	SD of Logged Detects 1.468
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.669	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.243	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0508	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	20.02	Standard Error of Mean 1.62
SD	30.43	95% KM (BCA) UCL 22.78
95% KM (t) UCL	22.69	95% KM (Percentile Bootstrap) UCL 22.87
95% KM (z) UCL	22.68	95% KM Bootstrap t UCL 23
90% KM Chebyshev UCL	24.88	95% KM Chebyshev UCL 27.08
97.5% KM Chebyshev UCL	30.14	99% KM Chebyshev UCL 36.14
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.679	Anderson-Darling GOF Test
5% A-D Critical Value	0.803	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0779	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0541	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.689	k star (bias corrected MLE) 0.684
Theta hat (MLE)	32.8	Theta star (bias corrected MLE) 33.02
nu hat (MLE)	418.7	nu star (bias corrected) 415.9
MLE Mean (bias corrected)	22.59	MLE Sd (bias corrected) 27.31
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.433	nu hat (KM) 315.9
Approximate Chi Square Value (315.91, α)	275.7	Adjusted Chi Square Value (315.91, β) 275.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	22.94	95% Gamma Adjusted KM-UCL (use when $n < 50$) 22.95
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 19.42
Maximum	280	Median 8
SD	30.22	CV 1.556
k hat (MLE)	0.462	k star (bias corrected MLE) 0.46
Theta hat (MLE)	42	Theta star (bias corrected MLE) 42.18
nu hat (MLE)	337.5	nu star (bias corrected) 336.1
MLE Mean (bias corrected)	19.42	MLE Sd (bias corrected) 28.62
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (336.10, α)	294.6	Adjusted Chi Square Value (336.10, β) 294.5
95% Gamma Approximate UCL (use when $n \geq 50$)	22.16	95% Gamma Adjusted UCL (use when $n < 50$) 22.17

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0834	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0508	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	19.35	Mean in Log Scale 1.926
SD in Original Scale	30.22	SD in Log Scale 1.61
95% t UCL (assumes normality of ROS data)	21.96	95% Percentile Bootstrap UCL 21.92
95% BCA Bootstrap UCL	22.21	95% Bootstrap t UCL 22.51
95% H-UCL (Log ROS)	31.49	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	22.22	Mean in Log Scale 1.999
SD in Original Scale	30.79	SD in Log Scale 1.829
95% t UCL (Assumes normality)	24.88	95% H-Stat UCL 51.98
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	27.08	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***diesel range organics (c10 - c28)***tphc10_28***t***mg/kg)		
General Statistics		
Total Number of Observations	318	Number of Distinct Observations 280
		Number of Missing Observations 0
Minimum	40.4	Mean 6906
Maximum	43800	Median 5005
SD	6987	Std. Error of Mean 391.8
Coefficient of Variation	1.012	Skewness 2.076
Normal GOF Test		
Shapiro Wilk Test Statistic	0.792	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.169	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0497	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	7552	95% Adjusted-CLT UCL (Chen-1995) 7599
		95% Modified-t UCL (Johnson-1978) 7560
Gamma GOF Test		
A-D Test Statistic	1.165	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.781	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0451	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0522	Detected data appear Gamma Distributed at 5% Significance Level
Detected data follow Appr. Gamma Distribution at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	1.122	k star (bias corrected MLE) 1.113
Theta hat (MLE)	6157	Theta star (bias corrected MLE) 6204
nu hat (MLE)	713.4	nu star (bias corrected) 708
MLE Mean (bias corrected)	6906	MLE Sd (bias corrected) 6546
		Approximate Chi Square Value (0.05) 647.2
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value 647
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50)	7554	95% Adjusted Gamma UCL (use when n<50) 7557
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.967	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	1.95E-04	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0708	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0497	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	3.699	Mean of logged Data 8.332
Maximum of Logged Data	10.69	SD of logged Data 1.103

Assuming Lognormal Distribution			
95% H-UCL	8755	90% Chebyshev (MVUE) UCL	9391
95% Chebyshev (MVUE) UCL	10196	97.5% Chebyshev (MVUE) UCL	11313
99% Chebyshev (MVUE) UCL	13508		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs			
95% CLT UCL	7551	95% Jackknife UCL	7552
95% Standard Bootstrap UCL	7557	95% Bootstrap-t UCL	#####
95% Hall's Bootstrap UCL	7599	95% Percentile Bootstrap UCL	7557
95% BCA Bootstrap UCL	7624		
90% Chebyshev(Mean, Sd) UCL	8082	95% Chebyshev(Mean, Sd) UCL	8614
97.5% Chebyshev(Mean, Sd) UCL	9353	99% Chebyshev(Mean, Sd) UCL	10804

Suggested UCL to Use	
95% Approximate Gamma UCL	7554

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***diesel range organics (c10 - c28)***tphc10_28***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	318	Number of Distinct Observations	318
		Number of Missing Observations	0
Minimum	119	Mean	722
Maximum	3110	Median	563.3
SD	551	Std. Error of Mean	30.9
Coefficient of Variation	0.763	Skewness	1.984

Normal GOF Test			
Shapiro Wilk Test Statistic	0.8	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.162	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0497	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	773	95% Adjusted-CLT UCL (Chen-1995)	776.5
		95% Modified-t UCL (Johnson-1978)	773.6

Gamma GOF Test			
A-D Test Statistic	2.354	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.764	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0716	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0514	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	2.256	k star (bias corrected MLE)	2.237
Theta hat (MLE)	320.1	Theta star (bias corrected MLE)	322.8
nu hat (MLE)	1435	nu star (bias corrected)	1422
MLE Mean (bias corrected)	722	MLE Sd (bias corrected)	482.8
		Approximate Chi Square Value (0.05)	#####
Adjusted Level of Significance	0.0492	Adjusted Chi Square Value	1336

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	768.8	95% Adjusted Gamma UCL (use when n<50)	769

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.973	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.00676	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0341	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0497	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	4.779	Mean of logged Data	6.344
Maximum of Logged Data	8.042	SD of logged Data	0.686

Assuming Lognormal Distribution			
95% H-UCL	775	90% Chebyshev (MVUE) UCL	811.9
95% Chebyshev (MVUE) UCL	853.6	97.5% Chebyshev (MVUE) UCL	911.5
99% Chebyshev (MVUE) UCL	1025		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs			
95% CLT UCL	772.8	95% Jackknife UCL	773
95% Standard Bootstrap UCL	771.8	95% Bootstrap-t UCL	776.8
95% Hall's Bootstrap UCL	777.1	95% Percentile Bootstrap UCL	773.6
95% BCA Bootstrap UCL	774.6		
90% Chebyshev(Mean, Sd) UCL	814.7	95% Chebyshev(Mean, Sd) UCL	856.7
97.5% Chebyshev(Mean, Sd) UCL	915	99% Chebyshev(Mean, Sd) UCL	1029
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	856.7		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***diethyl phthalate***84-66-2***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	#####
Number of Detects	11	Number of Non-Detects	355
Number of Distinct Detects	11	Number of Distinct Non-Detects	354
Minimum Detect	0.00168	Minimum Non-Detect	0.0163
Maximum Detect	0.0876	Maximum Non-Detect	6.045
Variance Detects	0.00139	Percent Non-Detects	96.99%
Mean Detects	0.0397	SD Detects	0.0372
Median Detects	0.0321	CV Detects	0.938
Skewness Detects	0.286	Kurtosis Detects	-2.008
Mean of Logged Detects	-3.989	SD of Logged Detects	1.517
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.81	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.249	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00807	Standard Error of Mean	0.00176
SD	0.0141	95% KM (BCA) UCL	0.0112
95% KM (t) UCL	0.011	95% KM (Percentile Bootstrap) UCL	0.0111
95% KM (z) UCL	0.011	95% KM Bootstrap t UCL	0.0117
90% KM Chebyshev UCL	0.0134	95% KM Chebyshev UCL	0.0158
97.5% KM Chebyshev UCL	0.0191	99% KM Chebyshev UCL	0.0256
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.735	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.212	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.265	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.781	k star (bias corrected MLE)	0.629
Theta hat (MLE)	0.0508	Theta star (bias corrected MLE)	0.0631
nu hat (MLE)	17.19	nu star (bias corrected)	13.84
MLE Mean (bias corrected)	0.0397	MLE Sd (bias corrected)	0.05
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.326	nu hat (KM)	238.7
Approximate Chi Square Value (238.71, α)	203.9	Adjusted Chi Square Value (238.71, β)	203.8
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00944	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00945

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.00168	Mean	0.0109
Maximum	0.0876	Median	0.01
SD	0.00798	CV	0.733
k hat (MLE)	7.639	k star (bias corrected MLE)	7.578
Theta hat (MLE)	0.00143	Theta star (bias corrected MLE)	0.00144
nu hat (MLE)	5592	nu star (bias corrected)	#####
MLE Mean (bias corrected)	0.0109	MLE Sd (bias corrected)	0.00396
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	5375	Adjusted Chi Square Value (N/A, β)	5375

95% Gamma Approximate UCL (use when n>=50)	0.0112	95% Gamma Adjusted UCL (use when n<50)	0.0112
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.859	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.191	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00593	Mean in Log Scale	-5.282
SD in Original Scale	0.00856	SD in Log Scale	0.342
95% t UCL (assumes normality of ROS data)	0.00667	95% Percentile Bootstrap UCL	0.00675
95% BCA Bootstrap UCL	0.00696	95% Bootstrap t UCL	0.00699
95% H-UCL (Log ROS)	0.00556		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.328	95% H-UCL (KM -Log)	0.00743
KM SD (logged)	0.825	95% Critical H Value (KM-Log)	1.993
KM Standard Error of Mean (logged)	0.254		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.232	Mean in Log Scale	-2.678
SD in Original Scale	0.542	SD in Log Scale	1.337
95% t UCL (Assumes normality)	0.279	95% H-Stat UCL	0.199
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.011	95% KM (Percentile Bootstrap) UCL	0.0111
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***diethyl phthalate***84-66-2***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	275
Number of Detects	11	Number of Non-Detects	355
Number of Distinct Detects	11	Number of Distinct Non-Detects	265
Minimum Detect	9.59	Minimum Non-Detect	83
Maximum Detect	730	Maximum Non-Detect	71570
Variance Detects	61377	Percent Non-Detects	96.99%
Mean Detects	266.6	SD Detects	247.7
Median Detects	330	CV Detects	0.929
Skewness Detects	0.443	Kurtosis Detects	-0.911
Mean of Logged Detects	4.776	SD of Logged Detects	1.613
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.876	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.227	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	57.22	Standard Error of Mean	15.47
SD	104.2	95% KM (BCA) UCL	87.09
95% KM (t) UCL	82.73	95% KM (Percentile Bootstrap) UCL	86.62
95% KM (z) UCL	82.67	95% KM Bootstrap t UCL	97.32
90% KM Chebyshev UCL	103.6	95% KM Chebyshev UCL	124.7
97.5% KM Chebyshev UCL	153.8	99% KM Chebyshev UCL	211.2
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.74	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.263	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.265	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.741	k star (bias corrected MLE)	0.599
Theta hat (MLE)	359.9	Theta star (bias corrected MLE)	444.8
nu hat (MLE)	16.29	nu star (bias corrected)	13.18
MLE Mean (bias corrected)	266.6	MLE Sd (bias corrected)	344.3

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.302	nu hat (KM)	220.9
Approximate Chi Square Value (220.90, α)	187.5	Adjusted Chi Square Value (220.90, β)	187.4
95% Gamma Approximate KM-UCL (use when n>=50)	67.41	95% Gamma Adjusted KM-UCL (use when n<50)	67.45
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	43
Maximum	730	Median	31.02
SD	66	CV	1.535
k hat (MLE)	0.492	k star (bias corrected MLE)	0.489
Theta hat (MLE)	87.47	Theta star (bias corrected MLE)	87.86
nu hat (MLE)	359.9	nu star (bias corrected)	358.3
MLE Mean (bias corrected)	43	MLE Sd (bias corrected)	61.47
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (358.26, α)	315.4	Adjusted Chi Square Value (358.26, β)	315.2
95% Gamma Approximate UCL (use when n>=50)	48.84	95% Gamma Adjusted UCL (use when n<50)	48.87
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.852	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.282	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	39.72	Mean in Log Scale	3.42
SD in Original Scale	59.96	SD in Log Scale	0.575
95% t UCL (assumes normality of ROS data)	44.89	95% Percentile Bootstrap UCL	45.34
95% BCA Bootstrap UCL	46.52	95% Bootstrap t UCL	47.58
95% H-UCL (Log ROS)	38.11		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	3.37	95% H-UCL (KM -Log)	52.22
KM SD (logged)	0.977	95% Critical H Value (KM-Log)	2.108
KM Standard Error of Mean (logged)	0.318		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2278	Mean in Log Scale	6.251
SD in Original Scale	5.76E+03	SD in Log Scale	1.518
95% t UCL (Assumes normality)	2775	95% H-Stat UCL	2017
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Normal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	82.73	95% KM (Percentile Bootstrap) UCL	86.62
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***dimethyl phthalate***131-11-3***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
Number of Detects	19	Number of Non-Detects	347
Number of Distinct Detects	19	Number of Distinct Non-Detects	346
Minimum Detect	0.0039	Minimum Non-Detect	0.0111
Maximum Detect	0.0519	Maximum Non-Detect	6.045
Variance Detects	1.82E-04	Percent Non-Detects	94.81%
Mean Detects	0.0172	SD Detects	0.0135
Median Detects	0.0123	CV Detects	0.785
Skewness Detects	1.48	Kurtosis Detects	1.311
Mean of Logged Detects	-4.315	SD of Logged Detects	0.72
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.797	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.269	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.203	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0124	Standard Error of Mean	0.00135

SD	0.00821	95% KM (BCA) UCL	0.0146
95% KM (t) UCL	0.0147	95% KM (Percentile Bootstrap) UCL	0.0148
95% KM (z) UCL	0.0147	95% KM Bootstrap t UCL	0.0148
90% KM Chebyshev UCL	0.0165	95% KM Chebyshev UCL	0.0183
97.5% KM Chebyshev UCL	0.0209	99% KM Chebyshev UCL	0.0259

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.724	Anderson-Darling GOF Test	
5% A-D Critical Value	0.751	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.183	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.201	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.137	k star (bias corrected MLE)	1.834
Theta hat (MLE)	0.00805	Theta star (bias corrected MLE)	0.00938
nu hat (MLE)	81.19	nu star (bias corrected)	69.7
MLE Mean (bias corrected)	0.0172	MLE Sd (bias corrected)	0.0127

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.3	nu hat (KM)	1683
Approximate Chi Square Value (N/A, α)	1589	Adjusted Chi Square Value (N/A, β)	1589
95% Gamma Approximate KM-UCL (use when n>=50)	0.0132	95% Gamma Adjusted KM-UCL (use when n<50)	0.0132

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0039	Mean	0.011
Maximum	5.19E-02	Median	1.08%
SD	0.00334	CV	0.303
k hat (MLE)	25.38	k star (bias corrected MLE)	25.18
Theta hat (MLE)	4.35E-04	Theta star (bias corrected MLE)	4.38E-04
nu hat (MLE)	18579	nu star (bias corrected)	18428
MLE Mean (bias corrected)	0.011	MLE Sd (bias corrected)	0.0022
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	18114	Adjusted Chi Square Value (N/A, β)	18112
95% Gamma Approximate UCL (use when n>=50)	0.0112	95% Gamma Adjusted UCL (use when n<50)	0.0112

Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.135	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.203	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0109	Mean in Log Scale	-4.542
SD in Original Scale	0.00336	SD in Log Scale	0.172
95% t UCL (assumes normality of ROS data)	0.0112	95% Percentile Bootstrap UCL	0.0112
95% BCA Bootstrap UCL	0.0113	95% Bootstrap t UCL	0.0113
95% H-UCL (Log ROS)	0.011		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-4.548	95% H-UCL (KM -Log)	0.013
KM SD (logged)	0.556	95% Critical H Value (KM-Log)	1.823
KM Standard Error of Mean (logged)	0.12		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.234	Mean in Log Scale	-2.673
SD in Original Scale	0.541	SD in Log Scale	1.348
95% t UCL (Assumes normality)	0.28	95% H-Stat UCL	0.204
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0147	95% GROS Approximate Gamma UCL	0.0112
95% Approximate Gamma KM-UCL	0.0132		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***dimethyl phthalate***131-11-3***t***ug/kg)

General Statistics

Total Number of Observations	366	Number of Distinct Observations	270
Number of Detects	19	Number of Non-Detects	347
Number of Distinct Detects	19	Number of Distinct Non-Detects	255
Minimum Detect	25.4	Minimum Non-Detect	63.1
Maximum Detect	462	Maximum Non-Detect	71570
Variance Detects	12159	Percent Non-Detects	94.81%
Mean Detects	178.6	SD Detects	110.3
Median Detects	150	CV Detects	0.617
Skewness Detects	1.368	Kurtosis Detects	1.668
Mean of Logged Detects	5.007	SD of Logged Detects	0.646
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.871	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.196	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.203	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Approximate Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	88.49	Standard Error of Mean	13.64
SD	78.78	95% KM (BCA) UCL	120.2
95% KM (t) UCL	111	95% KM (Percentile Bootstrap) UCL	117.5
95% KM (z) UCL	110.9	95% KM Bootstrap t UCL	116.3
90% KM Chebyshev UCL	129.4	95% KM Chebyshev UCL	147.9
97.5% KM Chebyshev UCL	173.7	99% KM Chebyshev UCL	224.2
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.368	Anderson-Darling GOF Test	
5% A-D Critical Value	0.748	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.121	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.2	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.963	k star (bias corrected MLE)	2.53
Theta hat (MLE)	60.28	Theta star (bias corrected MLE)	70.59
nu hat (MLE)	112.6	nu star (bias corrected)	96.14
MLE Mean (bias corrected)	178.6	MLE Sd (bias corrected)	112.3
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.262	nu hat (KM)	923.6
Approximate Chi Square Value (923.60, α)	854.1	Adjusted Chi Square Value (923.60, β)	853.8
95% Gamma Approximate KM-UCL (use when n>=50)	95.7	95% Gamma Adjusted KM-UCL (use when n<50)	95.73
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	53.12
Maximum	462	Median	46.04
SD	50.42	CV	0.949
k hat (MLE)	0.71	k star (bias corrected MLE)	0.706
Theta hat (MLE)	74.81	Theta star (bias corrected MLE)	75.24
nu hat (MLE)	519.7	nu star (bias corrected)	516.8
MLE Mean (bias corrected)	53.12	MLE Sd (bias corrected)	63.22
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (516.79, α)	465.1	Adjusted Chi Square Value (516.79, β)	464.9
95% Gamma Approximate UCL (use when n>=50)	59.02	95% Gamma Adjusted UCL (use when n<50)	59.05
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.94	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.901	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.124	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.203	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	70.84	Mean in Log Scale	4.17
SD in Original Scale	41.1	SD in Log Scale	0.387
95% t UCL (assumes normality of ROS data)	74.39	95% Percentile Bootstrap UCL	74.78
95% BCA Bootstrap UCL	74.58	95% Bootstrap t UCL	75.15
95% H-UCL (Log ROS)	72.28		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.146	95% H-UCL (KM -Log)	96.59
KM SD (logged)	0.823	95% Critical H Value (KM-Log)	1.992
KM Standard Error of Mean (logged)	0.225		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	

Mean in Original Scale	2286	Mean in Log Scale	6.255
SD in Original Scale	5762	SD in Log Scale	1.515
95% t UCL (Assumes normality)	2782	95% H-Stat UCL	2014
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Normal Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	111	95% KM (Percentile Bootstrap) UCL	117.5

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***di-n-butyl phthalate***84-74-2***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	359
Number of Detects	251	Number of Non-Detects	115
Number of Distinct Detects	244	Number of Distinct Non-Detects	115
Minimum Detect	0.00493	Minimum Non-Detect	0.0342
Maximum Detect	0.806	Maximum Non-Detect	6.045
Variance Detects	0.00453	Percent Non-Detects	31.42%
Mean Detects	0.0447	SD Detects	0.0673
Median Detects	0.0304	CV Detects	1.507
Skewness Detects	7.687	Kurtosis Detects	73.69
Mean of Logged Detects	-3.418	SD of Logged Detects	0.662

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.389
5% Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.287
5% Lilliefors Critical Value	0.0559
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0427	Standard Error of Mean	0.00339
SD	0.06	95% KM (BCA) UCL	0.0494
95% KM (t) UCL	0.0483	95% KM (Percentile Bootstrap) UCL	0.0487
95% KM (z) UCL	0.0483	95% KM Bootstrap t UCL	0.0509
90% KM Chebyshev UCL	0.0529	95% KM Chebyshev UCL	0.0575
97.5% KM Chebyshev UCL	0.0639	99% KM Chebyshev UCL	0.0764

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	12.53	Anderson-Darling GOF Test	
5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.167	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0587	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.762	k star (bias corrected MLE)	1.744
Theta hat (MLE)	0.0254	Theta star (bias corrected MLE)	0.0256
nu hat (MLE)	884.7	nu star (bias corrected)	875.5
MLE Mean (bias corrected)	0.0447	MLE Sd (bias corrected)	0.0338

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.507	nu hat (KM)	371
Approximate Chi Square Value (370.98, α)	327.3	Adjusted Chi Square Value (370.98, β)	327.2
95% Gamma Approximate KM-UCL (use when n>=50)	0.0484	95% Gamma Adjusted KM-UCL (use when n<50)	0.0484

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00493	Mean	0.0403
Maximum	0.806	Median	0.031
SD	0.0561	CV	1.392
k hat (MLE)	2.346	k star (bias corrected MLE)	2.328
Theta hat (MLE)	0.0172	Theta star (bias corrected MLE)	0.0173
nu hat (MLE)	1717	nu star (bias corrected)	1704
MLE Mean (bias corrected)	0.0403	MLE Sd (bias corrected)	0.0264
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1610	Adjusted Chi Square Value (N/A, β)	1609
95% Gamma Approximate UCL (use when n>=50)	4.27E-02	95% Gamma Adjusted UCL (use when n<50)	0.0427

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0896	Lilliefors GOF Test	

5% Lilliefors Critical Value	0.0559	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0407	Mean in Log Scale	-3.426
SD in Original Scale	0.056	SD in Log Scale	0.549
95% t UCL (assumes normality of ROS data)	0.0455	95% Percentile Bootstrap UCL	0.0459
95% BCA Bootstrap UCL	0.0478	95% Bootstrap t UCL	0.0484
95% H-UCL (Log ROS)	0.0398		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.226	Mean in Log Scale	-2.785
SD in Original Scale	0.545	SD in Log Scale	1.32
95% t UCL (Assumes normality)	0.273	95% H-Stat UCL	0.174
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0494		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***di-n-butyl phthalate***84-74-2***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	286
Number of Detects	251	Number of Non-Detects	115
Number of Distinct Detects	201	Number of Distinct Non-Detects	93
Minimum Detect	15.3	Minimum Non-Detect	112
Maximum Detect	5200	Maximum Non-Detect	71570
Variance Detects	319268	Percent Non-Detects	31.42%
Mean Detects	407.1	SD Detects	#####
Median Detects	250	CV Detects	1.388
Skewness Detects	5.106	Kurtosis Detects	33.53
Mean of Logged Detects	5.524	SD of Logged Detects	0.974
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.547	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.245	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0559	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	381.3	Standard Error of Mean	29.18
SD	510.5	95% KM (BCA) UCL	436.8
95% KM (t) UCL	429.4	95% KM (Percentile Bootstrap) UCL	433
95% KM (z) UCL	429.3	95% KM Bootstrap t UCL	439.8
90% KM Chebyshev UCL	468.9	95% KM Chebyshev UCL	508.5
97.5% KM Chebyshev UCL	563.5	99% KM Chebyshev UCL	671.7
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.805	Anderson-Darling GOF Test	
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0777	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0592	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.17	k star (bias corrected MLE)	1.159
Theta hat (MLE)	347.9	Theta star (bias corrected MLE)	351.3
nu hat (MLE)	587.3	nu star (bias corrected)	581.6
MLE Mean (bias corrected)	407.1	MLE Sd (bias corrected)	378.2
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.558	nu hat (KM)	408.4
Approximate Chi Square Value (408.37, α)	362.5	Adjusted Chi Square Value (408.37, β)	362.4
95% Gamma Approximate KM-UCL (use when n>=50)	429.5	95% Gamma Adjusted KM-UCL (use when n<50)	429.7
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	352.3

Maximum	5200	Median	240.7
SD	478.8	CV	1.359
k hat (MLE)	1.194	k star (bias corrected MLE)	1.186
Theta hat (MLE)	295.1	Theta star (bias corrected MLE)	297
nu hat (MLE)	874.1	nu star (bias corrected)	868.3
MLE Mean (bias corrected)	352.3	MLE Sd (bias corrected)	323.5
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (868.29, α)	800.9	Adjusted Chi Square Value (868.29, β)	800.7
95% Gamma Approximate UCL (use when n>=50)	382	95% Gamma Adjusted UCL (use when n<50)	382.1
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0338	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0559	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	353	Mean in Log Scale	5.491
SD in Original Scale	476	SD in Log Scale	0.824
95% t UCL (assumes normality of ROS data)	394	95% Percentile Bootstrap UCL	396.5
95% BCA Bootstrap UCL	400.8	95% Bootstrap t UCL	410.9
95% H-UCL (Log ROS)	371.1		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	5.484	95% H-UCL (KM -Log)	420.8
KM SD (logged)	0.953	95% Critical H Value (KM-Log)	2.09
KM Standard Error of Mean (logged)	0.0588		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2220	Mean in Log Scale	6.143
SD in Original Scale	5784	SD in Log Scale	1.515
95% t UCL (Assumes normality)	2719	95% H-Stat UCL	1803
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	436.8		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***di-n-octyl phthalate***117-84-0***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
Number of Detects	194	Number of Non-Detects	172
Number of Distinct Detects	194	Number of Distinct Non-Detects	172
Minimum Detect	0.00767	Minimum Non-Detect	0.0221
Maximum Detect	2.776	Maximum Non-Detect	6.045
Variance Detects	0.071	Percent Non-Detects	46.99%
Mean Detects	0.127	SD Detects	26.60%
Median Detects	0.0786	CV Detects	2.103
Skewness Detects	7.923	Kurtosis Detects	7109.00%
Mean of Logged Detects	-2.634	SD of Logged Detects	0.96
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.346	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.328	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0636	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.098	Standard Error of Mean	0.0115
SD	0.207	95% KM (BCA) UCL	0.121
95% KM (t) UCL	0.117	95% KM (Percentile Bootstrap) UCL	0.118
95% KM (z) UCL	0.117	95% KM Bootstrap t UCL	0.134
90% KM Chebyshev UCL	0.132	95% KM Chebyshev UCL	0.148
97.5% KM Chebyshev UCL	0.17	99% KM Chebyshev UCL	0.212
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.905	Anderson-Darling GOF Test	
5% A-D Critical Value	0.783	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.151	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0671	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.015 k star (bias corrected MLE)	1.003
Theta hat (MLE)	0.125 Theta star (bias corrected MLE)	0.126
nu hat (MLE)	393.9 nu star (bias corrected)	389.2
MLE Mean (bias corrected)	0.127 MLE Sd (bias corrected)	0.126

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.225 nu hat (KM)	164.4
Approximate Chi Square Value (164.45, α)	135.8 Adjusted Chi Square Value (164.45, β)	135.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.119 95% Gamma Adjusted KM-UCL (use when n<50)	0.119

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00767 Mean	0.0778
Maximum	2.776 Median	0.0336
SD	0.201 CV	2.578
k hat (MLE)	0.867 k star (bias corrected MLE)	0.862
Theta hat (MLE)	0.0898 Theta star (bias corrected MLE)	0.0903
nu hat (MLE)	634.6 nu star (bias corrected)	630.8
MLE Mean (bias corrected)	0.0778 MLE Sd (bias corrected)	0.0839
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (630.76, α)	573.5 Adjusted Chi Square Value (630.76, β)	573.3
95% Gamma Approximate UCL (use when n>=50)	0.0856 95% Gamma Adjusted UCL (use when n<50)	0.0857

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0626 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0636 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0904 Mean in Log Scale	-2.823
SD in Original Scale	0.198 SD in Log Scale	0.748
95% t UCL (assumes normality of ROS data)	0.107 95% Percentile Bootstrap UCL	0.108
95% BCA Bootstrap UCL	0.114 95% Bootstrap t UCL	0.128
95% H-UCL (Log ROS)	0.0848	

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-2.845 95% H-UCL (KM -Log)	0.0982
KM SD (logged)	0.922 95% Critical H Value (KM-Log)	2.065
KM Standard Error of Mean (logged)	0.0603	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.273 Mean in Log Scale	-2.275
SD in Original Scale	0.55 SD in Log Scale	1.238
95% t UCL (Assumes normality)	0.32 95% H-Stat UCL	0.257
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics		
Detected Data appear Lognormal Distributed at 5% Significance Level		

Suggested UCL to Use		
95% KM (t) UCL	0.117 95% KM (% Bootstrap) UCL	0.118

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***di-n-octyl phthalate***117-84-0***t***ug/kg)

General Statistics		
Total Number of Observations	366 Number of Distinct Observations	271
Number of Detects	194 Number of Non-Detects	172
Number of Distinct Detects	161 Number of Distinct Non-Detects	136
Minimum Detect	37 Minimum Non-Detect	126
Maximum Detect	40810 Maximum Non-Detect	71570
Variance Detects	12960149 Percent Non-Detects	46.99%
Mean Detects	1428 SD Detects	3600
Median Detects	743.5 CV Detects	2.521
Skewness Detects	8.754 Kurtosis Detects	86.77
Mean of Logged Detects	6.509 SD of Logged Detects	116%

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.314 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.35 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0636 Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	973.6	Standard Error of Mean	147.6
SD	2737	95% KM (BCA) UCL	1260
95% KM (t) UCL	1217	95% KM (Percentile Bootstrap) UCL	1251
95% KM (z) UCL	1216	95% KM Bootstrap t UCL	1526
90% KM Chebyshev UCL	1416	95% KM Chebyshev UCL	1617
97.5% KM Chebyshev UCL	1895	99% KM Chebyshev UCL	2442

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.785	Anderson-Darling GOF Test	
5% A-D Critical Value	0.794	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.131	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0677	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.787	k star (bias corrected MLE)	0.778
Theta hat (MLE)	1815	Theta star (bias corrected MLE)	1835
nu hat (MLE)	305.4	nu star (bias corrected)	302
MLE Mean (bias corrected)	1428	MLE Sd (bias corrected)	1619

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.127	nu hat (KM)	92.62
Approximate Chi Square Value (92.62, α)	71.43	Adjusted Chi Square Value (92.62, β)	71.35
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1263	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1264

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	777.1
Maximum	40810	Median	166.5
SD	2710	CV	3.488
k hat (MLE)	0.153	k star (bias corrected MLE)	0.153
Theta hat (MLE)	5085	Theta star (bias corrected MLE)	5066
nu hat (MLE)	111.9	nu star (bias corrected)	112.3
MLE Mean (bias corrected)	777.1	MLE Sd (bias corrected)	1984
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (112.30, α)	88.83	Adjusted Chi Square Value (112.30, β)	88.75
95% Gamma Approximate UCL (use when $n \geq 50$)	982.4	95% Gamma Adjusted UCL (use when $n < 50$)	983.3

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0542	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0636	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	902.7	Mean in Log Scale	6.087
SD in Original Scale	2679	SD in Log Scale	1.019
95% t UCL (assumes normality of ROS data)	1134	95% Percentile Bootstrap UCL	1147
95% BCA Bootstrap UCL	1268	95% Bootstrap t UCL	1499
95% H-UCL (Log ROS)	829.2		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	6.054	95% H-UCL (KM -Log)	1001
KM SD (logged)	1.193	95% Critical H Value (KM-Log)	2.291
KM Standard Error of Mean (logged)	0.0761		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	2656	Mean in Log Scale	6.654
SD in Original Scale	5906	SD in Log Scale	1.437
95% t UCL (Assumes normality)	3165	95% H-Stat UCL	2632
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	1617		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***endosulfan sulfate***1031-07-8***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	365	Number of Distinct Observations 339
Number of Detects	78	Number of Non-Detects 287
Number of Distinct Detects	69	Number of Distinct Non-Detects 278
Minimum Detect	9.24E-06	Minimum Non-Detect 4.94E-06
Maximum Detect	0.00988	Maximum Non-Detect 0.0142
Variance Detects	2.82E-06	Percent Non-Detects 78.63%
Mean Detects	5.20E-04	SD Detects 0.00168
Median Detects	1.12E-04	CV Detects 3.229
Skewness Detects	4.372	Kurtosis Detects 18.6
Mean of Logged Detects	-9.024	SD of Logged Detects 1.335
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.303	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.454	Lilliefors GOF Test
5% Lilliefors Critical Value	0.1	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1.28E-04	Standard Error of Mean 4.45E-05
SD	8.21E-04	95% KM (BCA) UCL 2.08E-04
95% KM (t) UCL	2.01E-04	95% KM (Percentile Bootstrap) UCL 2.10E-04
95% KM (z) UCL	2.01E-04	95% KM Bootstrap t UCL 2.73E-04
90% KM Chebyshev UCL	2.62E-04	95% KM Chebyshev UCL 3.22E-04
97.5% KM Chebyshev UCL	4.06E-04	99% KM Chebyshev UCL 5.71E-04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	10.73	Anderson-Darling GOF Test
5% A-D Critical Value	0.832	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.288	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.108	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.442	k star (bias corrected MLE) 0.434
Theta hat (MLE)	0.00118	Theta star (bias corrected MLE) 0.0012
nu hat (MLE)	69.03	nu star (bias corrected) 67.71
MLE Mean (bias corrected)	5.20E-04	MLE Sd (bias corrected) 7.90E-04
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0243	nu hat (KM) 17.75
Approximate Chi Square Value (17.75, α)	9.212	Adjusted Chi Square Value (17.75, β) 9.187
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.47E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$) 2.47E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	9.24E-06	Mean 0.00797
Maximum	0.01	Median 0.01
SD	0.00397	CV 0.498
k hat (MLE)	0.823	k star (bias corrected MLE) 0.819
Theta hat (MLE)	0.00968	Theta star (bias corrected MLE) 0.00974
nu hat (MLE)	601.1	nu star (bias corrected) 597.5
MLE Mean (bias corrected)	0.00797	MLE Sd (bias corrected) 0.00881
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (597.52, α)	541.8	Adjusted Chi Square Value (597.52, β) 541.6
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00879	95% Gamma Adjusted UCL (use when $n < 50$) 0.0088
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.109	Lilliefors GOF Test
5% Lilliefors Critical Value	0.1	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.15E-04	Mean in Log Scale -11.62
SD in Original Scale	8.01E-04	SD in Log Scale 1.529
95% t UCL (assumes normality of ROS data)	1.84E-04	95% Percentile Bootstrap UCL 1.91E-04
95% BCA Bootstrap UCL	2.15E-04	95% Bootstrap t UCL 2.56E-04
95% H-UCL (Log ROS)	3.55E-05	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	4.81E-04	Mean in Log Scale -9.866
SD in Original Scale	0.00145	SD in Log Scale 1.676
95% t UCL (Assumes normality)	6.06E-04	95% H-Stat UCL 2.70E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL2.08E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***endosulfan sulfate***1031-07-8***t***ug/kg)

General Statistics			
Total Number of Observations	365	Number of Distinct Observations	275
Number of Detects	78	Number of Non-Detects	287
Number of Distinct Detects	63	Number of Distinct Non-Detects	235
Minimum Detect	0.042	Minimum Non-Detect	0.024
Maximum Detect	126.8	Maximum Non-Detect	123.4
Variance Detects	491.4	Percent Non-Detects	78.63%
Mean Detects	6.062	SD Detects	22.17
Median Detects	0.655	CV Detects	3.657
Skewness Detects	4.45	Kurtosis Detects	19.27
Mean of Logged Detects	-0.195	SD of Logged Detects	151.90%

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.286	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.458	Lilliefors GOF Test
5% Lilliefors Critical Value	0.1	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.411	Standard Error of Mean	0.564
SD	10.58	95% KM (BCA) UCL	2.454
95% KM (t) UCL	2.342	95% KM (Percentile Bootstrap) UCL	2.44
95% KM (z) UCL	2.339	95% KM Bootstrap t UCL	3.503
90% KM Chebyshev UCL	3.104	95% KM Chebyshev UCL	3.87
97.5% KM Chebyshev UCL	4.934	99% KM Chebyshev UCL	7.024

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	12.52	Anderson-Darling GOF Test	
5% A-D Critical Value	0.856	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.33	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.109	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.339	k star (bias corrected MLE)	0.334
Theta hat (MLE)	17.91	Theta star (bias corrected MLE)	18.15
nu hat (MLE)	52.81	nu star (bias corrected)	52.11
MLE Mean (bias corrected)	6.062	MLE Sd (bias corrected)	10.49

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0178	nu hat (KM)	12.98
Approximate Chi Square Value (12.98, α)	5.88	Adjusted Chi Square Value (12.98, β)	5.861
95% Gamma Approximate KM-UCL (use when n>=50)	3.116	95% Gamma Adjusted KM-UCL (use when n<50)	3.126
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1.303
Maximum	126.8	Median	0.01
SD	10.49	CV	8.052
k hat (MLE)	0.189	k star (bias corrected MLE)	0.189
Theta hat (MLE)	6.895	Theta star (bias corrected MLE)	6.885
nu hat (MLE)	138	nu star (bias corrected)	138.2
MLE Mean (bias corrected)	1.303	MLE Sd (bias corrected)	2.995
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (138.18, α)	112	Adjusted Chi Square Value (138.18, β)	111.9
95% Gamma Approximate UCL (use when n>=50)	1.608	95% Gamma Adjusted UCL (use when n<50)	1.609

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.133 Lilliefors GOF Test
5% Lilliefors Critical Value	0.1 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1.319	Mean in Log Scale	-2.983
SD in Original Scale	10.49	SD in Log Scale	1.726
95% t UCL (assumes normality of ROS data)	2.224	95% Percentile Bootstrap UCL	2.255
95% BCA Bootstrap UCL	2.486	95% Bootstrap t UCL	3.316
95% H-UCL (Log ROS)	0.29		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.881	Mean in Log Scale	-94.00%
SD in Original Scale	15.69	SD in Log Scale	1.8
95% t UCL (Assumes normality)	6.235	95% H-Stat UCL	2.59

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL 3.87

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***endosulfan, alpha- (i)***959-98-8***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	331
Number of Detects	27	Number of Non-Detects	335
Number of Distinct Detects	26	Number of Distinct Non-Detects	306
Minimum Detect	5.23E-05	Minimum Non-Detect	1.72E-05
Maximum Detect	0.0085	Maximum Non-Detect	0.0142
Variance Detects	2.51E-06	Percent Non-Detects	92.54%
Mean Detects	0.00114	SD Detects	0.00158
Median Detects	8.43E-04	CV Detects	1.388
Skewness Detects	4.122	Kurtosis Detects	19.27
Mean of Logged Detects	-7.292	SD of Logged Detects	1.072

Normal GOF Test on Detects Only
Shapiro Wilk Test Statistic 0.528 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value 0.923 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic 0.295 Lilliefors GOF Test
5% Lilliefors Critical Value 0.171 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.17E-04	Standard Error of Mean	3.00E-05
SD	5.36E-04	95% KM (BCA) UCL	1.74E-04
95% KM (t) UCL	1.67E-04	95% KM (Percentile Bootstrap) UCL	1.68E-04
95% KM (z) UCL	1.67E-04	95% KM Bootstrap t UCL	2.06E-04
90% KM Chebyshev UCL	2.07E-04	95% KM Chebyshev UCL	2.48E-04
97.5% KM Chebyshev UCL	3.05E-04	99% KM Chebyshev UCL	4.16E-04

Gamma GOF Tests on Detected Observations Only
A-D Test Statistic 0.748 Anderson-Darling GOF Test
5% A-D Critical Value 0.771 Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic 0.156 Kolmogrov-Smirnoff GOF
5% K-S Critical Value 0.173 Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.105	k star (bias corrected MLE)	1.007
Theta hat (MLE)	0.00103	Theta star (bias corrected MLE)	0.00113
nu hat (MLE)	59.68	nu star (bias corrected)	54.38
MLE Mean (bias corrected)	0.00114	MLE Sd (bias corrected)	0.00114

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.048	nu hat (KM)	34.78
Approximate Chi Square Value (34.78, α)	22.29	Adjusted Chi Square Value (34.78, β)	22.25
95% Gamma Approximate KM-UCL (use when n \geq 50)	1.83E-04	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	1.84E-04
Gamma (KM) may not be used when k hat (KM) is $<$ 0.1			

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has $>$ 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as $<$ 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	5.23E-05	Mean	0.00934
Maximum	0.01	Median	0.01
SD	0.00237	CV	0.254
k hat (MLE)	3.945	k star (bias corrected MLE)	3.914

Theta hat (MLE)	0.00237	Theta star (bias corrected MLE)	0.00239
nu hat (MLE)	2856	nu star (bias corrected)	2834
MLE Mean (bias corrected)	0.00934	MLE Sd (bias corrected)	0.00472
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2711	Adjusted Chi Square Value (N/A, β)	2711
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00976	95% Gamma Adjusted UCL (use when $n < 50$)	0.00976
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.939	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.145	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	9.45E-05	Mean in Log Scale	-11.28
SD in Original Scale	5.19E-04	SD in Log Scale	1.246
95% t UCL (assumes normality of ROS data)	1.39E-04	95% Percentile Bootstrap UCL	1.47E-04
95% BCA Bootstrap UCL	1.69E-04	95% Bootstrap t UCL	1.87E-04
95% H-UCL (Log ROS)	3.20E-05		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-10.58	95% H-UCL (KM -Log)	5.48E-05
KM SD (logged)	1.128	95% Critical H Value (KM-Log)	2.233
KM Standard Error of Mean (logged)	0.0726		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	6.34E-04	Mean in Log Scale	-8.775
SD in Original Scale	0.00133	SD in Log Scale	1.673
95% t UCL (Assumes normality)	7.49E-04	95% H-Stat UCL	7.99E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	1.67E-04	95% GROS Approximate Gamma UCL	0.00976
95% Approximate Gamma KM-UCL	1.83E-04		
Warning: Recommended UCL exceeds the maximum observation			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***endosulfan, alpha- (i)***959-98-8***t***ug/kg)			
General Statistics			
Total Number of Observations	362	Number of Distinct Observations	269
Number of Detects	27	Number of Non-Detects	335
Number of Distinct Detects	27	Number of Distinct Non-Detects	247
Minimum Detect	0.28	Minimum Non-Detect	0.09
Maximum Detect	88.88	Maximum Non-Detect	123.4
Variance Detects	274.6	Percent Non-Detects	92.54%
Mean Detects	1.21E+01	SD Detects	1.66E+01
Median Detects	8.69	CV Detects	1.371
Skewness Detects	4.103	Kurtosis Detects	1905.00%
Mean of Logged Detects	1.948	SD of Logged Detects	1.191
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.529	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.303	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.11	Standard Error of Mean	0.312
SD	5.625	95% KM (BCA) UCL	1.74
95% KM (t) UCL	1.625	95% KM (Percentile Bootstrap) UCL	1.668
95% KM (z) UCL	1.624	95% KM Bootstrap t UCL	2.065
90% KM Chebyshev UCL	2.047	95% KM Chebyshev UCL	2.471
97.5% KM Chebyshev UCL	3.06	99% KM Chebyshev UCL	4.217
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.93	Anderson-Darling GOF Test	
5% A-D Critical Value	0.772	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.165	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.173	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.055 k star (bias corrected MLE)	0.962
Theta hat (MLE)	11.46 Theta star (bias corrected MLE)	12.56
nu hat (MLE)	56.97 nu star (bias corrected)	51.97
MLE Mean (bias corrected)	12.09 MLE Sd (bias corrected)	12.32

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0389 nu hat (KM)	28.19
Approximate Chi Square Value (28.19, α)	17.07 Adjusted Chi Square Value (28.19, β)	17.04
95% Gamma Approximate KM-UCL (use when n \geq 50)	1.832 95% Gamma Adjusted KM-UCL (use when n<50)	1.836
Gamma (KM) may not be used when k hat (KM) is < 0.1		

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	0.911
Maximum	88.88 Median	0.01
SD	5.466 CV	6.002
k hat (MLE)	1.85E-01 k star (bias corrected MLE)	0.185
Theta hat (MLE)	4.919 Theta star (bias corrected MLE)	4.911
nu hat (MLE)	134 nu star (bias corrected)	134.3
MLE Mean (bias corrected)	0.911 MLE Sd (bias corrected)	2.115
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (134.26, α)	108.5 Adjusted Chi Square Value (134.26, β)	108.4
95% Gamma Approximate UCL (use when n \geq 50)	1.127 95% Gamma Adjusted UCL (use when n<50)	1.128

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.875 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.923 Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.197 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.171 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.981 Mean in Log Scale	-2.408
SD in Original Scale	5.455 SD in Log Scale	1.494
95% t UCL (assumes normality of ROS data)	1.454 95% Percentile Bootstrap UCL	1.516
95% BCA Bootstrap UCL	1.749 95% Bootstrap t UCL	1.892
95% H-UCL (Log ROS)	0.336	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	5.916 Mean in Log Scale	0.153
SD in Original Scale	13.26 SD in Log Scale	1.792
95% t UCL (Assumes normality)	7.066 95% H-Stat UCL	7.615
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Gamma Distributed at 5% Significance Level		

Suggested UCL to Use		
95% KM (t) UCL	1.625 95% GROS Approximate Gamma UCL	1.127
95% Approximate Gamma KM-UCL	1.832	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***endosulfan, beta (ii)***33213-65-9***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	362 Number of Distinct Observations	349
Number of Detects	59 Number of Non-Detects	303
Number of Distinct Detects	57 Number of Distinct Non-Detects	297
Minimum Detect	1.00E-05 Minimum Non-Detect	2.00E-05
Maximum Detect	8.43E-04 Maximum Non-Detect	0.0142
Variance Detects	4.15E-08 Percent Non-Detects	83.70%
Mean Detects	1.96E-04 SD Detects	2.04E-04
Median Detects	1.41E-04 CV Detects	1.041
Skewness Detects	1.659 Kurtosis Detects	2.342
Mean of Logged Detects	-9.101 SD of Logged Detects	1.16

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.794 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	7.79E-11 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.213 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.115 Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	6.82E-05	Standard Error of Mean	7.39E-06
SD	1.15E-04	95% KM (BCA) UCL	8.01E-05
95% KM (t) UCL	8.04E-05	95% KM (Percentile Bootstrap) UCL	7.98E-05
95% KM (z) UCL	8.03E-05	95% KM Bootstrap t UCL	8.16E-05
90% KM Chebyshev UCL	9.03E-05	95% KM Chebyshev UCL	1.00E-04
97.5% KM Chebyshev UCL	1.14E-04	99% KM Chebyshev UCL	1.42E-04

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.484	Anderson-Darling GOF Test	
5% A-D Critical Value	0.779	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0925	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.119	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.023	k star (bias corrected MLE)	0.983
Theta hat (MLE)	1.91E-04	Theta star (bias corrected MLE)	1.99E-04
nu hat (MLE)	120.7	nu star (bias corrected)	115.9
MLE Mean (bias corrected)	1.96E-04	MLE Sd (bias corrected)	1.98E-04

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.353	nu hat (KM)	255.4
Approximate Chi Square Value (255.36, α)	219.4	Adjusted Chi Square Value (255.36, β)	219.2
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	7.94E-05	95% Gamma Adjusted KM-UCL (use when $n < 50$)	7.94E-05

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.00E-05	Mean	0.0084
Maximum	0.01	Median	0.01
SD	0.00363	CV	0.432
k hat (MLE)	1.03	k star (bias corrected MLE)	1.023
Theta hat (MLE)	0.00816	Theta star (bias corrected MLE)	0.00821
nu hat (MLE)	745.5	nu star (bias corrected)	740.6
MLE Mean (bias corrected)	0.0084	MLE Sd (bias corrected)	0.00831
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (740.65, α)	678.5	Adjusted Chi Square Value (740.65, β)	678.3
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00917	95% Gamma Adjusted UCL (use when $n < 50$)	0.00917

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.101	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.115	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	5.54E-05	Mean in Log Scale	-10.27
SD in Original Scale	1.03E-04	SD in Log Scale	0.722
95% t UCL (assumes normality of ROS data)	6.43E-05	95% Percentile Bootstrap UCL	6.48E-05
95% BCA Bootstrap UCL	6.65E-05	95% Bootstrap t UCL	6.69E-05
95% H-UCL (Log ROS)	4.83E-05		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-10.28	95% H-UCL (KM -Log)	6.53E-05
KM SD (logged)	1.03	95% Critical H Value (KM-Log)	2.151
KM Standard Error of Mean (logged)	0.0977		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.18E-04	Mean in Log Scale	-8.923
SD in Original Scale	0.00126	SD in Log Scale	1.409
95% t UCL (Assumes normality)	6.27E-04	95% H-Stat UCL	4.33E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	8.04E-05	95% GROS Approximate Gamma UCL	0.00917
95% Approximate Gamma KM-UCL	7.94E-05		
Warning: Recommended UCL exceeds the maximum observation			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***endosulfan, beta (ii)***33213-65-9***t***ug/kg)

General Statistics			
Total Number of Observations	362	Number of Distinct Observations	273
Number of Detects	59	Number of Non-Detects	303
Number of Distinct Detects	49	Number of Distinct Non-Detects	236
Minimum Detect	0.046	Minimum Non-Detect	0.147
Maximum Detect	11	Maximum Non-Detect	123.4
Variance Detects	6.899	Percent Non-Detects	83.70%
Mean Detects	1.809	SD Detects	2.627
Median Detects	0.79	CV Detects	1.452
Skewness Detects	2.14	Kurtosis Detects	3.94
Mean of Logged Detects	-0.328	SD of Logged Detects	1.427
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.668	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	1.11E-16	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.272	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.115	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.525	Standard Error of Mean	0.0768
SD	1.302	95% KM (BCA) UCL	0.66
95% KM (t) UCL	0.651	95% KM (Percentile Bootstrap) UCL	0.653
95% KM (z) UCL	0.651	95% KM Bootstrap t UCL	0.683
90% KM Chebyshev UCL	0.755	95% KM Chebyshev UCL	0.86
97.5% KM Chebyshev UCL	1.004	99% KM Chebyshev UCL	1.289
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.491	Anderson-Darling GOF Test	
5% A-D Critical Value	0.801	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.162	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.121	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.662	k star (bias corrected MLE)	0.639
Theta hat (MLE)	2.734	Theta star (bias corrected MLE)	2.829
nu hat (MLE)	78.08	nu star (bias corrected)	75.44
MLE Mean (bias corrected)	1.809	MLE Sd (bias corrected)	2.262
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.163	nu hat (KM)	117.7
Approximate Chi Square Value (117.71, α)	93.66	Adjusted Chi Square Value (117.71, β)	93.57
95% Gamma Approximate KM-UCL (use when n>=50)	0.66	95% Gamma Adjusted KM-UCL (use when n<50)	0.66
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.305
Maximum	11	Median	0.01
SD	1.245	CV	4.086
k hat (MLE)	0.262	k star (bias corrected MLE)	0.261
Theta hat (MLE)	1.165	Theta star (bias corrected MLE)	1.167
nu hat (MLE)	189.3	nu star (bias corrected)	189.1
MLE Mean (bias corrected)	0.305	MLE Sd (bias corrected)	0.596
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (189.11, α)	158.3	Adjusted Chi Square Value (189.11, β)	158.2
95% Gamma Approximate UCL (use when n>=50)	0.364	95% Gamma Adjusted UCL (use when n<50)	0.364
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0672	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.115	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.435	Mean in Log Scale	-1.621
SD in Original Scale	1.217	SD in Log Scale	0.899
95% t UCL (assumes normality of ROS data)	0.54	95% Percentile Bootstrap UCL	0.545
95% BCA Bootstrap UCL	0.571	95% Bootstrap t UCL	0.576
95% H-UCL (Log ROS)	0.326		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.613	95% H-UCL (KM -Log)	0.44
KM SD (logged)	1.146	95% Critical H Value (KM-Log)	2.249
KM Standard Error of Mean (logged)	0.111		
DL/2 Statistics			

DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	5.021	Mean in Log Scale 0.00245
SD in Original Scale	12.67	SD in Log Scale 1.571
95% t UCL (Assumes normality)	6.119	95% H-Stat UCL 4.29
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL 0.66

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***endrin aldehyde***7421-93-4***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	361	Number of Distinct Observations 334
Number of Detects	65	Number of Non-Detects 296
Number of Distinct Detects	57	Number of Distinct Non-Detects 286
Minimum Detect	1.05E-05	Minimum Non-Detect 9.10E-06
Maximum Detect	9.25E-04	Maximum Non-Detect 0.0142
Variance Detects	2.53E-08	Percent Non-Detects 81.99%
Mean Detects	1.36E-04	SD Detects 1.59E-04
Median Detects	8.44E-05	CV Detects 1.169
Skewness Detects	2.753	Kurtosis Detects 10.1
Mean of Logged Detects	-9.461	SD of Logged Detects 1.108

Normal GOF Test on Detects Only
Shapiro Wilk Test Statistic 0.725 Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value 3.33E-16 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic 0.215 Lilliefors GOF Test
5% Lilliefors Critical Value 0.11 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	5.69E-05	Standard Error of Mean 6.25E-06
SD	9.31E-05	95% KM (BCA) UCL 6.69E-05
95% KM (t) UCL	6.72E-05	95% KM (Percentile Bootstrap) UCL 6.79E-05
95% KM (z) UCL	6.72E-05	95% KM Bootstrap t UCL 6.87E-05
90% KM Chebyshev UCL	7.57E-05	95% KM Chebyshev UCL 8.42E-05
97.5% KM Chebyshev UCL	9.59E-05	99% KM Chebyshev UCL 1.19E-04

Gamma GOF Tests on Detected Observations Only
A-D Test Statistic 0.642 Anderson-Darling GOF Test
5% A-D Critical Value 0.779 Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic 0.0795 Kolmogrov-Smirnoff GOF
5% K-S Critical Value 0.114 Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.03	k star (bias corrected MLE) 0.992
Theta hat (MLE)	1.32E-04	Theta star (bias corrected MLE) 1.37E-04
nu hat (MLE)	133.9	nu star (bias corrected) 129
MLE Mean (bias corrected)	1.36E-04	MLE Sd (bias corrected) 1.37E-04

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.373	nu hat (KM) 269.4
Approximate Chi Square Value (269.36, α)	232.4	Adjusted Chi Square Value (269.36, β) 232.2
95% Gamma Approximate KM-UCL (use when n>=50)	6.60E-05	95% Gamma Adjusted KM-UCL (use when n<50) 6.60E-05

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.05E-05	Mean	0.00822
Maximum	0.01	Median	0.01
SD	0.0038	CV	0.462
k hat (MLE)	0.866	k star (bias corrected MLE)	0.86
Theta hat (MLE)	0.0095	Theta star (bias corrected MLE)	0.00956
nu hat (MLE)	624.9	nu star (bias corrected)	621
MLE Mean (bias corrected)	0.00822	MLE Sd (bias corrected)	0.00887
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (621.05, α)	564.2	Adjusted Chi Square Value (621.05, β)	564
95% Gamma Approximate UCL (use when n>=50)	0.00905	95% Gamma Adjusted UCL (use when n<50)	0.00906

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0818	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.11	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.23E-05	Mean in Log Scale	-10.54
SD in Original Scale	8.03E-05	SD in Log Scale	0.749
95% t UCL (assumes normality of ROS data)	4.92E-05	95% Percentile Bootstrap UCL	4.97E-05
95% BCA Bootstrap UCL	5.09E-05	95% Bootstrap t UCL	5.20E-05
95% H-UCL (Log ROS)	3.77E-05		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-10.46	95% H-UCL (KM -Log)	5.68E-05
KM SD (logged)	1.059	95% Critical H Value (KM-Log)	2.174
KM Standard Error of Mean (logged)	0.0974		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.22E-04	Mean in Log Scale	-8.993
SD in Original Scale	0.00127	SD in Log Scale	1.507
95% t UCL (Assumes normality)	6.32E-04	95% H-Stat UCL	4.75E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	6.72E-05	95% GROS Approximate Gamma UCL	0.00905
95% Approximate Gamma KM-UCL	6.60E-05		
Warning: Recommended UCL exceeds the maximum observation			
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***endrin aldehyde***7421-93-4***t***ug/kg)			
General Statistics			
Total Number of Observations	3.61E+02	Number of Distinct Observations	#####
Number of Detects	65	Number of Non-Detects	296
Number of Distinct Detects	58	Number of Distinct Non-Detects	238
Minimum Detect	0.051	Minimum Non-Detect	0.052
Maximum Detect	5.65	Maximum Non-Detect	123.4
Variance Detects	1.563	Percent Non-Detects	81.99%
Mean Detects	1.103	SD Detects	1.25
Median Detects	0.58	CV Detects	1.134
Skewness Detects	1.53E+00	Kurtosis Detects	2.028
Mean of Logged Detects	-0.626	SD of Logged Detects	1.311
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.796	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	4.60E-12	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.21	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.11	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.417	Standard Error of Mean	0.0499
SD	0.754	95% KM (BCA) UCL	0.507
95% KM (t) UCL	0.5	95% KM (Percentile Bootstrap) UCL	0.499
95% KM (z) UCL	0.499	95% KM Bootstrap t UCL	0.511
90% KM Chebyshev UCL	0.567	95% KM Chebyshev UCL	0.635
97.5% KM Chebyshev UCL	0.729	99% KM Chebyshev UCL	0.914
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.131	Anderson-Darling GOF Test	
5% A-D Critical Value	0.789	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.121	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.115	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.818	k star (bias corrected MLE)	0.79
Theta hat (MLE)	1.349	Theta star (bias corrected MLE)	1.396
nu hat (MLE)	106.3	nu star (bias corrected)	102.7
MLE Mean (bias corrected)	1.103	MLE Sd (bias corrected)	1.241
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.307	nu hat (KM)	221.4
Approximate Chi Square Value (221.42, α)	188	Adjusted Chi Square Value (221.42, β)	187.9

95% Gamma Approximate KM-UCL (use when n>=50)	0.492	95% Gamma Adjusted KM-UCL (use when n<50)	0.492
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.229
Maximum	5.65	Median	0.01
SD	0.672	CV	2.936
k hat (MLE)	0.322	k star (bias corrected MLE)	0.321
Theta hat (MLE)	0.712	Theta star (bias corrected MLE)	0.713
nu hat (MLE)	232.3	nu star (bias corrected)	231.7
MLE Mean (bias corrected)	0.229	MLE Sd (bias corrected)	0.404
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (231.65, α)	197.4	Adjusted Chi Square Value (231.65, β)	197.3
95% Gamma Approximate UCL (use when n>=50)	0.269	95% Gamma Adjusted UCL (use when n<50)	0.269
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.101	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.11	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.316	Mean in Log Scale	-1.779
SD in Original Scale	0.646	SD in Log Scale	0.881
95% t UCL (assumes normality of ROS data)	0.372	95% Percentile Bootstrap UCL	0.372
95% BCA Bootstrap UCL	0.381	95% Bootstrap t UCL	0.385
95% H-UCL (Log ROS)	0.273		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.724	95% H-UCL (KM -Log)	0.4
KM SD (logged)	1.158	95% Critical H Value (KM-Log)	2.26
KM Standard Error of Mean (logged)	0.107		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.96	Mean in Log Scale	-0.0638
SD in Original Scale	12.68	SD in Log Scale	1.642
95% t UCL (Assumes normality)	6.06	95% H-Stat UCL	4.568
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.507		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***endrin ketone***53494-70-5***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	355	Number of Distinct Observations	335
Number of Detects	69	Number of Non-Detects	#####
Number of Distinct Detects	65	Number of Distinct Non-Detects	276
Minimum Detect	3.80E-05	Minimum Non-Detect	9.50E-06
Maximum Detect	0.0145	Maximum Non-Detect	0.0142
Variance Detects	9.33E-06	Percent Non-Detects	80.56%
Mean Detects	0.00119	SD Detects	0.00305
Median Detects	2.15E-04	CV Detects	2.568
Skewness Detects	3.218	Kurtosis Detects	9.516
Mean of Logged Detects	-8.17E+00	SD of Logged Detects	1.338
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.399	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.466	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.107	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2.74E-04	Standard Error of Mean	7.68E-05
SD	0.00142	95% KM (BCA) UCL	4.07E-04
95% KM (t) UCL	4.01E-04	95% KM (Percentile Bootstrap) UCL	4.08E-04
95% KM (z) UCL	4.01E-04	95% KM Bootstrap t UCL	4.71E-04
90% KM Chebyshev UCL	5.05E-04	95% KM Chebyshev UCL	6.09E-04
97.5% KM Chebyshev UCL	7.54E-04	99% KM Chebyshev UCL	0.00104

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	11.56	Anderson-Darling GOF Test
5% A-D Critical Value	0.829	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.364	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.114	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.449	k star (bias corrected MLE) 0.439
Theta hat (MLE)	0.00265	Theta star (bias corrected MLE) 0.00271
nu hat (MLE)	61.97	nu star (bias corrected) 60.61
MLE Mean (bias corrected)	0.00119	MLE Sd (bias corrected) 0.00179
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0372	nu hat (KM) 26.39
Approximate Chi Square Value (26.39, α)	15.68	Adjusted Chi Square Value (26.39, β) 15.65
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	4.62E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$) 4.63E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	3.80E-05	Mean 0.00829
Maximum	0.0145	Median 0.01
SD	0.00374	CV 0.451
k hat (MLE)	1.126	k star (bias corrected MLE) 1.119
Theta hat (MLE)	0.00736	Theta star (bias corrected MLE) 0.00741
nu hat (MLE)	799.7	nu star (bias corrected) 794.3
MLE Mean (bias corrected)	0.00829	MLE Sd (bias corrected) 0.00784
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (794.32, α)	729.9	Adjusted Chi Square Value (794.32, β) 729.7
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00902	95% Gamma Adjusted UCL (use when $n < 50$) 0.00902
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.213	Lilliefors GOF Test
5% Lilliefors Critical Value	0.107	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.47E-04	Mean in Log Scale -10.37
SD in Original Scale	0.00142	SD in Log Scale 1.286
95% t UCL (assumes normality of ROS data)	3.71E-04	95% Percentile Bootstrap UCL 3.75E-04
95% BCA Bootstrap UCL	4.13E-04	95% Bootstrap t UCL 4.60E-04
95% H-UCL (Log ROS)	8.46E-05	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	6.36E-04	Mean in Log Scale -8.823
SD in Original Scale	0.00177	SD in Log Scale 1.461
95% t UCL (Assumes normality)	7.91E-04	95% H-Stat UCL 5.22E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	4.07E-04	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***endrin ketone***53494-70-5***t***ug/kg)		
General Statistics		
Total Number of Observations	355	Number of Distinct Observations 271
Number of Detects	69	Number of Non-Detects 286
Number of Distinct Detects	52	Number of Distinct Non-Detects 237
Minimum Detect	0.25	Minimum Non-Detect 4.90E-02
Maximum Detect	166.4	Maximum Non-Detect 123.4
Variance Detects	1.14E+03	Percent Non-Detects 80.56%
Mean Detects	12.53	SD Detects 33.78
Median Detects	1.4	CV Detects 2.696
Skewness Detects	3.171	Kurtosis Detects 9.271
Mean of Logged Detects	0.718	SD of Logged Detects 1.553
Normal GOF Test on Detects Only		

Shapiro Wilk Test Statistic	0.4 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0.00E+00 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.462 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.107 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2.717 Standard Error of Mean	8.39E-01
SD	15.62 95% KM (BCA) UCL	4.448
95% KM (t) UCL	4.1 95% KM (Percentile Bootstrap) UCL	4.251
95% KM (z) UCL	4.097 95% KM Bootstrap t UCL	4.803
90% KM Chebyshev UCL	5.233 95% KM Chebyshev UCL	6.373
97.5% KM Chebyshev UCL	7.955 99% KM Chebyshev UCL	11.06
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	10.64 Anderson-Darling GOF Test	
5% A-D Critical Value	0.849 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.34 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.115 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.369 k star (bias corrected MLE)	0.362
Theta hat (MLE)	33.99 Theta star (bias corrected MLE)	34.59
nu hat (MLE)	50.85 nu star (bias corrected)	49.98
MLE Mean (bias corrected)	12.53 MLE Sd (bias corrected)	20.82
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0303 nu hat (KM)	21.5
Approximate Chi Square Value (21.50, α)	11.96 Adjusted Chi Square Value (21.50, β)	11.93
95% Gamma Approximate KM-UCL (use when n>=50)	4.883 95% Gamma Adjusted KM-UCL (use when n<50)	4.895
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	2.443
Maximum	166.4 Median	0.01
SD	15.61 CV	6.391
k hat (MLE)	0.169 k star (bias corrected MLE)	0.17
Theta hat (MLE)	14.44 Theta star (bias corrected MLE)	14.4
nu hat (MLE)	120.1 nu star (bias corrected)	120.4
MLE Mean (bias corrected)	2.443 MLE Sd (bias corrected)	5.932
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (120.42, α)	96.08 Adjusted Chi Square Value (120.42, β)	95.99
95% Gamma Approximate UCL (use when n>=50)	3.062 95% Gamma Adjusted UCL (use when n<50)	3.065
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.171 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.107 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.52 Mean in Log Scale	-1.842
SD in Original Scale	15.6 SD in Log Scale	1.556
95% t UCL (assumes normality of ROS data)	3.885 95% Percentile Bootstrap UCL	3.937
95% BCA Bootstrap UCL	4.455 95% Bootstrap t UCL	4.642
95% H-UCL (Log ROS)	0.661	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	6.273 Mean in Log Scale	0.111
SD in Original Scale	18.69 SD in Log Scale	1.613
95% t UCL (Assumes normality)	7.909 95% H-Stat UCL	5.165
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	6.373	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***endrin***72-20-8***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	365	Number of Distinct Observations 344
Number of Detects	95	Number of Non-Detects 270
Number of Distinct Detects	91	Number of Distinct Non-Detects 261
Minimum Detect	2.00E-05	Minimum Non-Detect 1.00E-05
Maximum Detect	0.0299	Maximum Non-Detect 0.011
Variance Detects	2.20E-05	Percent Non-Detects 73.97%
Mean Detects	0.00202	SD Detects 0.00469
Median Detects	1.90E-04	CV Detects 2.329
Skewness Detects	3.253	Kurtosis Detects 13.34
Mean of Logged Detects	-8.119	SD of Logged Detects 1.749
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.487	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.443	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0909	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	5.61E-04	Standard Error of Mean 1.34E-04
SD	0.00254	95% KM (BCA) UCL 7.91E-04
95% KM (t) UCL	7.83E-04	95% KM (Percentile Bootstrap) UCL 7.97E-04
95% KM (z) UCL	7.82E-04	95% KM Bootstrap t UCL 8.46E-04
90% KM Chebyshev UCL	9.64E-04	95% KM Chebyshev UCL 0.00115
97.5% KM Chebyshev UCL	0.0014	99% KM Chebyshev UCL 0.0019
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	13.01	Anderson-Darling GOF Test
5% A-D Critical Value	0.855	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.312	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.099	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.351	k star (bias corrected MLE) 0.347
Theta hat (MLE)	0.00573	Theta star (bias corrected MLE) 0.0058
nu hat (MLE)	66.78	nu star (bias corrected) 66.01
MLE Mean (bias corrected)	0.00202	MLE Sd (bias corrected) 0.00342
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0488	nu hat (KM) 35.6
Approximate Chi Square Value (35.60, α)	22.95	Adjusted Chi Square Value (35.60, β) 22.91
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	8.71E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$) 8.73E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2.00E-05	Mean 0.00792
Maximum	0.0299	Median 0.01
SD	0.00424	CV 0.536
k hat (MLE)	0.862	k star (bias corrected MLE) 0.857
Theta hat (MLE)	0.00919	Theta star (bias corrected MLE) 0.00924
nu hat (MLE)	629.6	nu star (bias corrected) 625.7
MLE Mean (bias corrected)	0.00792	MLE Sd (bias corrected) 0.00856
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (625.71, α)	568.7	Adjusted Chi Square Value (625.71, β) 568.5
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00872	95% Gamma Adjusted UCL (use when $n < 50$) 0.00872
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.172	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0909	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	5.34E-04	Mean in Log Scale -10.53
SD in Original Scale	0.00254	SD in Log Scale 1.758
95% t UCL (assumes normality of ROS data)	7.54E-04	95% Percentile Bootstrap UCL 7.76E-04
95% BCA Bootstrap UCL	8.12E-04	95% Bootstrap t UCL 8.29E-04
95% H-UCL (Log ROS)	1.64E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	7.95E-04	Mean in Log Scale -8.99
SD in Original Scale	0.00265	SD in Log Scale 1.542
95% t UCL (Assumes normality)	0.00102	95% H-Stat UCL 5.06E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL0.00115

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***endrin***72-20-8***t***ug/kg)

General Statistics			
Total Number of Observations	365	Number of Distinct Observations	276
Number of Detects	95	Number of Non-Detects	270
Number of Distinct Detects	77	Number of Distinct Non-Detects	216
Minimum Detect	0.064	Minimum Non-Detect	0.064
Maximum Detect	350	Maximum Non-Detect	115.6
Variance Detects	2591	Percent Non-Detects	73.97%
Mean Detects	20.82	SD Detects	50.9
Median Detects	1.2	CV Detects	2.445
Skewness Detects	3.71	Kurtosis Detects	18.39
Mean of Logged Detects	0.737	SD of Logged Detects	2.023
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.474	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.411	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0909	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.694	Standard Error of Mean	1.447
SD	27.42	95% KM (BCA) UCL	8.39
95% KM (t) UCL	8.08	95% KM (Percentile Bootstrap) UCL	8.222
95% KM (z) UCL	8.074	95% KM Bootstrap t UCL	9.036
90% KM Chebyshev UCL	10.04	95% KM Chebyshev UCL	12
97.5% KM Chebyshev UCL	14.73	99% KM Chebyshev UCL	20.09
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	11.36	Anderson-Darling GOF Test	
5% A-D Critical Value	0.868	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.278	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0997	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.3	k star (bias corrected MLE)	0.297
Theta hat (MLE)	69.42	Theta star (bias corrected MLE)	70
nu hat (MLE)	56.98	nu star (bias corrected)	56.52
MLE Mean (bias corrected)	20.82	MLE Sd (bias corrected)	38.18
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0431	nu hat (KM)	31.47
Approximate Chi Square Value (31.47, α)	19.65	Adjusted Chi Square Value (31.47, β)	19.61
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	9.118	95% Gamma Adjusted KM-UCL (use when $n < 50$)	9.135
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	5.427
Maximum	350	Median	0.01
SD	27.44	CV	5.056
k hat (MLE)	0.156	k star (bias corrected MLE)	0.156
Theta hat (MLE)	34.83	Theta star (bias corrected MLE)	34.71
nu hat (MLE)	113.7	nu star (bias corrected)	114.1
MLE Mean (bias corrected)	5.427	MLE Sd (bias corrected)	13.72
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (114.13, α)	90.46	Adjusted Chi Square Value (114.13, β)	90.38
95% Gamma Approximate UCL (use when $n \geq 50$)	6.846	95% Gamma Adjusted UCL (use when $n < 50$)	6.852
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.171	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0909	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			

Mean in Original Scale	5.497	Mean in Log Scale	-1.742
SD in Original Scale	27.42	SD in Log Scale	1.951
95% t UCL (assumes normality of ROS data)	7.864	95% Percentile Bootstrap UCL	8.045
95% BCA Bootstrap UCL	8.573	95% Bootstrap t UCL	8.924
95% H-UCL (Log ROS)	1.605		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	8.013	Mean in Log Scale	-0.0572
SD in Original Scale	28.51	SD in Log Scale	1.669
95% t UCL (Assumes normality)	10.47	95% H-Stat UCL	4.834

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
97.5% KM (Chebyshev) UCL 14.73

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***ethylbenzene***100-41-4***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	162
Number of Detects	29	Number of Non-Detects	143
Number of Distinct Detects	29	Number of Distinct Non-Detects	134
Minimum Detect	1.20E-04	Minimum Non-Detect	1.60E-04
Maximum Detect	1.062	Maximum Non-Detect	0.129
Variance Detects	0.061	Percent Non-Detects	83.14%
Mean Detects	0.161	SD Detects	0.247
Median Detects	0.0345	CV Detects	1.532
Skewness Detects	2.162	Kurtosis Detects	5.365
Mean of Logged Detects	-4.275	SD of Logged Detects	3.173

Normal GOF Test on Detects Only
Shapiro Wilk Test Statistic 0.707 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value 0.926 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic 0.257 Lilliefors GOF Test
5% Lilliefors Critical Value 0.165 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0274	Standard Error of Mean	0.00904
SD	0.116	95% KM (BCA) UCL	0.0451
95% KM (t) UCL	0.0423	95% KM (Percentile Bootstrap) UCL	0.044
95% KM (z) UCL	0.0422	95% KM Bootstrap t UCL	0.0495
90% KM Chebyshev UCL	0.0545	95% KM Chebyshev UCL	0.0668
97.5% KM Chebyshev UCL	0.0838	99% KM Chebyshev UCL	0.117

Gamma GOF Tests on Detected Observations Only
A-D Test Statistic 0.883 Anderson-Darling GOF Test
5% A-D Critical Value 0.864 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic 0.167 Kolmogrov-Smirnoff GOF
5% K-S Critical Value 0.177 Detected data appear Gamma Distributed at 5% Significance Level
Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.284	k star (bias corrected MLE)	0.278
Theta hat (MLE)	0.568	Theta star (bias corrected MLE)	0.581
nu hat (MLE)	16.47	nu star (bias corrected)	16.1
MLE Mean (bias corrected)	0.161	MLE Sd (bias corrected)	0.306

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0552	nu hat (KM)	18.99
Approximate Chi Square Value (18.99, α)	10.11	Adjusted Chi Square Value (18.99, β)	10.06
95% Gamma Approximate KM-UCL (use when n \geq 50)	0.0514	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	0.0517
Gamma (KM) may not be used when k hat (KM) is $<$ 0.1			

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has $>$ 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as $<$ 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.20E-04	Mean	0.0355
Maximum	1.062	Median	0.01
SD	0.115	CV	3.238
k hat (MLE)	0.521	k star (bias corrected MLE)	0.516

Theta hat (MLE)	0.0681	Theta star (bias corrected MLE)	0.0688
nu hat (MLE)	179.3	nu star (bias corrected)	177.5
MLE Mean (bias corrected)	0.0355	MLE Sd (bias corrected)	0.0494
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (177.46, α)	147.6	Adjusted Chi Square Value (177.46, β)	147.4
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0427	95% Gamma Adjusted UCL (use when $n < 50$)	0.0427
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.876	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.169	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0273	Mean in Log Scale	-8.279
SD in Original Scale	0.117	SD in Log Scale	2.264
95% t UCL (assumes normality of ROS data)	0.042	95% Percentile Bootstrap UCL	0.0436
95% BCA Bootstrap UCL	0.0468	95% Bootstrap t UCL	0.0505
95% H-UCL (Log ROS)	0.00605		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0293	Mean in Log Scale	-7.215
SD in Original Scale	0.117	SD in Log Scale	2.207
95% t UCL (Assumes normality)	0.044	95% H-Stat UCL	0.015
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.0423	95% GROS Approximate Gamma UCL	0.0427
95% Approximate Gamma KM-UCL	0.0514		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***ethylbenzene***100-41-4***t***ug/kg)			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	76
Number of Detects	29	Number of Non-Detects	143
Number of Distinct Detects	28	Number of Distinct Non-Detects	53
Minimum Detect	0.89	Minimum Non-Detect	1.5
Maximum Detect	9700	Maximum Non-Detect	1700
Variance Detects	5391681	Percent Non-Detects	83.14%
Mean Detects	1576	SD Detects	2322
Median Detects	490	CV Detects	1.474
Skewness Detects	1.949	Kurtosis Detects	4.201
Mean of Logged Detects	5.024	SD of Logged Detects	3.086
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.727	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.249	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	267.4	Standard Error of Mean	85.9
SD	1107	95% KM (BCA) UCL	425.2
95% KM (t) UCL	409.5	95% KM (Percentile Bootstrap) UCL	412.8
95% KM (z) UCL	408.7	95% KM Bootstrap t UCL	483.6
90% KM Chebyshev UCL	525.1	95% KM Chebyshev UCL	641.8
97.5% KM Chebyshev UCL	803.9	99% KM Chebyshev UCL	1122
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.83	Anderson-Darling GOF Test	
5% A-D Critical Value	0.858	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.176	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.177	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.296	k star (bias corrected MLE)	0.288
Theta hat (MLE)	5329	Theta star (bias corrected MLE)	5470
nu hat (MLE)	17.15	nu star (bias corrected)	16.71
MLE Mean (bias corrected)	1576	MLE Sd (bias corrected)	2936

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0584 nu hat (KM)	20.08
Approximate Chi Square Value (20.08, α)	10.91 Adjusted Chi Square Value (20.08, β)	10.85
95% Gamma Approximate KM-UCL (use when n>=50)	492.2 95% Gamma Adjusted KM-UCL (use when n<50)	494.8
Gamma (KM) may not be used when k hat (KM) is < 0.1		

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	265.7
Maximum	9700 Median	0.01
SD	1110 CV	4.18
k hat (MLE)	0.0954 k star (bias corrected MLE)	0.0976
Theta hat (MLE)	2785 Theta star (bias corrected MLE)	2722
nu hat (MLE)	32.81 nu star (bias corrected)	33.58
MLE Mean (bias corrected)	265.7 MLE Sd (bias corrected)	850.3
	Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (33.58, α)	21.33 Adjusted Chi Square Value (33.58, β)	21.24
95% Gamma Approximate UCL (use when n>=50)	418.3 95% Gamma Adjusted UCL (use when n<50)	419.9

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.889 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.926 Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.165 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.165 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	267.2 Mean in Log Scale	0.138
SD in Original Scale	1110 SD in Log Scale	3.113
95% t UCL (assumes normality of ROS data)	407.2 95% Percentile Bootstrap UCL	418.3
95% BCA Bootstrap UCL	458.5 95% Bootstrap t UCL	465.7
95% H-UCL (Log ROS)	431.7	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	289.3 Mean in Log Scale	1.716
SD in Original Scale	1109 SD in Log Scale	2.368
95% t UCL (Assumes normality)	429.1 95% H-Stat UCL	177.4
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	409.5 95% GROS Approximate Gamma UCL	418.3
95% Approximate Gamma KM-UCL	492.2	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***fluoranthene***206-44-0***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	366 Number of Distinct Observations	365
	Number of Missing Observations	0
Minimum	0.0341 Mean	1.081
Maximum	11.71 Median	0.854
SD	0.966 Std. Error of Mean	0.0505
Coefficient of Variation	0.894 Skewness	5.497

Normal GOF Test		
Shapiro Wilk Test Statistic	0.617 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.198 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.165 95% Adjusted-CLT UCL (Chen-1995)	1.18
	95% Modified-t UCL (Johnson-1978)	1.167

Gamma GOF Test		
A-D Test Statistic	6.783 Anderson-Darling Gamma GOF Test	

5% A-D Critical Value	0.763	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0911	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.048	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.49	k star (bias corrected MLE)	2.472
Theta hat (MLE)	0.434	Theta star (bias corrected MLE)	0.437
nu hat (MLE)	1823	nu star (bias corrected)	1809
MLE Mean (bias corrected)	1.081	MLE Sd (bias corrected)	0.688
		Approximate Chi Square Value (0.05)	1711
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1711
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1.143	95% Adjusted Gamma UCL (use when n<50)	1.143
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.955	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.25E-11	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0657	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-3.378	Mean of logged Data	-0.136
Maximum of Logged Data	2.46	SD of logged Data	0.641
Assuming Lognormal Distribution			
95% H-UCL	1.142	90% Chebyshev (MVUE) UCL	1.189
95% Chebyshev (MVUE) UCL	1.243	97.5% Chebyshev (MVUE) UCL	1.317
99% Chebyshev (MVUE) UCL	1.463		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1.164	95% Jackknife UCL	1.165
95% Standard Bootstrap UCL	1.164	95% Bootstrap-t UCL	1.185
95% Hall's Bootstrap UCL	1.196	95% Percentile Bootstrap UCL	1.166
95% BCA Bootstrap UCL	1.18		
90% Chebyshev(Mean, Sd) UCL	1.233	95% Chebyshev(Mean, Sd) UCL	1.301
97.5% Chebyshev(Mean, Sd) UCL	1.397	99% Chebyshev(Mean, Sd) UCL	1.584
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1.301		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***fluoranthene***206-44-0***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	293
		Number of Missing Observations	0
Minimum	148	Mean	10127
Maximum	118000	Median	7705
SD	11668	Std. Error of Mean	609.9
Coefficient of Variation	1.152	Skewness	4.469
Normal GOF Test			
Shapiro Wilk Test Statistic	0.643	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	11132	95% Adjusted-CLT UCL (Chen-1995)	11282
		95% Modified-t UCL (Johnson-1978)	11156
Gamma GOF Test			
A-D Test Statistic	2.837	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.777	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0633	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0486	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics		
k hat (MLE)	1.309	k star (bias corrected MLE) 1.3
Theta hat (MLE)	7738	Theta star (bias corrected MLE) 7791
nu hat (MLE)	957.9	nu star (bias corrected) 951.4
MLE Mean (bias corrected)	10127	MLE Sd (bias corrected) 8882
		Approximate Chi Square Value (0.05) 880.8
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value 880.6
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	10938	95% Adjusted Gamma UCL (use when n<50) 10941
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.969	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	1.62E-04	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0818	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	4.997	Mean of logged Data 8.794
Maximum of Logged Data	11.68	SD of logged Data 0.965
Assuming Lognormal Distribution		
95% H-UCL	11685	90% Chebyshev (MVUE) UCL 12401
95% Chebyshev (MVUE) UCL	13267	97.5% Chebyshev (MVUE) UCL 14468
99% Chebyshev (MVUE) UCL	16828	
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	11130	95% Jackknife UCL 11132
95% Standard Bootstrap UCL	11108	95% Bootstrap-t UCL 11276
95% Hall's Bootstrap UCL	11365	95% Percentile Bootstrap UCL 11156
95% BCA Bootstrap UCL	11308	
90% Chebyshev(Mean, Sd) UCL	11956	95% Chebyshev(Mean, Sd) UCL 12785
97.5% Chebyshev(Mean, Sd) UCL	13935	99% Chebyshev(Mean, Sd) UCL 16195
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	12785	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***fluorene***86-73-7***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 362
Number of Detects	352	Number of Non-Detects 14
Number of Distinct Detects	348	Number of Distinct Non-Detects 14
Minimum Detect	0.00847	Minimum Non-Detect 0.583
Maximum Detect	3.135	Maximum Non-Detect 1.209
Variance Detects	0.0755	Percent Non-Detects 3.83%
Mean Detects	0.106	SD Detects 0.275
Median Detects	0.044	CV Detects 2.584
Skewness Detects	7.403	Kurtosis Detects 66.45
Mean of Logged Detects	-2.92	SD of Logged Detects 0.86
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.308	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.37	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0472	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.105	Standard Error of Mean 0.0142
SD	0.27	95% KM (BCA) UCL 0.128
95% KM (t) UCL	0.128	95% KM (Percentile Bootstrap) UCL 0.13
95% KM (z) UCL	0.128	95% KM Bootstrap t UCL 0.139
90% KM Chebyshev UCL	0.148	95% KM Chebyshev UCL 0.167
97.5% KM Chebyshev UCL	0.194	99% KM Chebyshev UCL 0.246
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	46.51	Anderson-Darling GOF Test
5% A-D Critical Value	0.791	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.292	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0502	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.866 k star (bias corrected MLE)	0.86
Theta hat (MLE)	0.123 Theta star (bias corrected MLE)	0.124
nu hat (MLE)	609.6 nu star (bias corrected)	605.7
MLE Mean (bias corrected)	0.106 MLE Sd (bias corrected)	0.115
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.151 nu hat (KM)	110.8
Approximate Chi Square Value (110.83, α)	87.53 Adjusted Chi Square Value (110.83, β)	87.45
95% Gamma Approximate KM-UCL (use when n>=50)	0.133 95% Gamma Adjusted KM-UCL (use when n<50)	0.133
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.00847 Mean	0.103
Maximum	3.135 Median	0.043
SD	0.27 CV	2.607
k hat (MLE)	0.875 k star (bias corrected MLE)	0.869
Theta hat (MLE)	0.118 Theta star (bias corrected MLE)	0.119
nu hat (MLE)	640.2 nu star (bias corrected)	636.3
MLE Mean (bias corrected)	0.103 MLE Sd (bias corrected)	0.111
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (636.26, α)	578.7 Adjusted Chi Square Value (636.26, β)	578.5
95% Gamma Approximate UCL (use when n>=50)	0.114 95% Gamma Adjusted UCL (use when n<50)	0.114
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.18 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0472 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.104 Mean in Log Scale	-2.921
SD in Original Scale	0.27 SD in Log Scale	0.843
95% t UCL (assumes normality of ROS data)	0.128 95% Percentile Bootstrap UCL	0.129
95% BCA Bootstrap UCL	0.134 95% Bootstrap t UCL	0.136
95% H-UCL (Log ROS)	0.084	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.118 Mean in Log Scale	-2.844
SD in Original Scale	0.276 SD in Log Scale	0.926
95% t UCL (Assumes normality)	0.141 95% H-Stat UCL	0.0988
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.128	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***fluorene***86-73-7***t***ug/kg)		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	291
Number of Detects	352 Number of Non-Detects	14
Number of Distinct Detects	278 Number of Distinct Non-Detects	13
Minimum Detect	16.4 Minimum Non-Detect	6468
Maximum Detect	47339 Maximum Non-Detect	10505
Variance Detects	13921722 Percent Non-Detects	3.83%
Mean Detects	1109 SD Detects	3731
Median Detects	372 CV Detects	3.365
Skewness Detects	8.568 Kurtosis Detects	88.26
Mean of Logged Detects	6.001 SD of Logged Detects	1.084
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.27 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.397 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0472 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1090 Standard Error of Mean	191.9

SD	3660	95% KM (BCA) UCL	1441
95% KM (t) UCL	1406	95% KM (Percentile Bootstrap) UCL	1409
95% KM (z) UCL	1405	95% KM Bootstrap t UCL	1567
90% KM Chebyshev UCL	1665	95% KM Chebyshev UCL	1926
97.5% KM Chebyshev UCL	2288	99% KM Chebyshev UCL	2999

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	40.29	Anderson-Darling GOF Test	
5% A-D Critical Value	0.811	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.262	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0509	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.61	k star (bias corrected MLE)	0.607
Theta hat (MLE)	1817	Theta star (bias corrected MLE)	1827
nu hat (MLE)	429.7	nu star (bias corrected)	427.3
MLE Mean (bias corrected)	1109	MLE Sd (bias corrected)	1423

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0886	nu hat (KM)	64.87
Approximate Chi Square Value (64.87, α)	47.34	Adjusted Chi Square Value (64.87, β)	47.28
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1493	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1495
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	1069
Maximum	47339	Median	360.5
SD	3665	CV	3.427
k hat (MLE)	0.488	k star (bias corrected MLE)	0.486
Theta hat (MLE)	2189	Theta star (bias corrected MLE)	2199
nu hat (MLE)	357.6	nu star (bias corrected)	356
MLE Mean (bias corrected)	1069	MLE Sd (bias corrected)	1533
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (355.97, α)	313.2	Adjusted Chi Square Value (355.97, β)	313.1
95% Gamma Approximate UCL (use when $n \geq 50$)	1215	95% Gamma Adjusted UCL (use when $n < 50$)	1216

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.128	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0472	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	1082	Mean in Log Scale	6
SD in Original Scale	3662	SD in Log Scale	1.064
95% t UCL (assumes normality of ROS data)	1397	95% Percentile Bootstrap UCL	1419
95% BCA Bootstrap UCL	1503	95% Bootstrap t UCL	1584
95% H-UCL (Log ROS)	801.8		

DL/2 Statistics

DL/2 Normal	DL/2 Log-Transformed		
Mean in Original Scale	1212	Mean in Log Scale	6.087
SD in Original Scale	3697	SD in Log Scale	1.147
95% t UCL (Assumes normality)	1531	95% H-Stat UCL	972.2
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	1926
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***heptachlor epoxide***1024-57-3***t***mg/kg (at 1% toc))

General Statistics

Total Number of Observations	366	Number of Distinct Observations	338
Number of Detects	269	Number of Non-Detects	97
Number of Distinct Detects	253	Number of Distinct Non-Detects	90
Minimum Detect	8.25E-06	Minimum Non-Detect	3.72E-06
Maximum Detect	0.0118	Maximum Non-Detect	0.0142
Variance Detects	3.12E-06	Percent Non-Detects	26.50%
Mean Detects	5.44E-04	SD Detects	0.00177

Median Detects	8.15E-05	CV Detects	3.245
Skewness Detects	4.254	Kurtosis Detects	18.23
Mean of Logged Detects	-9.199	SD of Logged Detects	1.349
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.319	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.44	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.054	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4.17E-04	Standard Error of Mean	8.19E-05
SD	0.00155	95% KM (BCA) UCL	5.60E-04
95% KM (t) UCL	5.53E-04	95% KM (Percentile Bootstrap) UCL	5.57E-04
95% KM (z) UCL	5.52E-04	95% KM Bootstrap t UCL	5.89E-04
90% KM Chebyshev UCL	6.63E-04	95% KM Chebyshev UCL	7.75E-04
97.5% KM Chebyshev UCL	9.29E-04	99% KM Chebyshev UCL	0.00123
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	47.45	Anderson-Darling GOF Test	
5% A-D Critical Value	0.848	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.342	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0597	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.392	k star (bias corrected MLE)	0.39
Theta hat (MLE)	0.00139	Theta star (bias corrected MLE)	0.00139
nu hat (MLE)	211	nu star (bias corrected)	210
MLE Mean (bias corrected)	5.44E-04	MLE Sd (bias corrected)	8.71E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.073	nu hat (KM)	53.4
Approximate Chi Square Value (53.40, α)	37.62	Adjusted Chi Square Value (53.40, β)	37.56
95% Gamma Approximate KM-UCL (use when n>=50)	5.93E-04	95% Gamma Adjusted KM-UCL (use when n<50)	5.94E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	8.25E-06	Mean	0.00305
Maximum	0.0118	Median	1.09E-04
SD	0.00444	CV	1.457
k hat (MLE)	0.313	k star (bias corrected MLE)	0.312
Theta hat (MLE)	0.00975	Theta star (bias corrected MLE)	0.00977
nu hat (MLE)	229	nu star (bias corrected)	228.5
MLE Mean (bias corrected)	0.00305	MLE Sd (bias corrected)	0.00546
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (228.48, α)	194.5	Adjusted Chi Square Value (228.48, β)	194.4
95% Gamma Approximate UCL (use when n>=50)	0.00358	95% Gamma Adjusted UCL (use when n<50)	0.00359
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.186	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.054	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4.06E-04	Mean in Log Scale	-9.683
SD in Original Scale	1.53E-03	SD in Log Scale	1.473
95% t UCL (assumes normality of ROS data)	5.38E-04	95% Percentile Bootstrap UCL	5.37E-04
95% BCA Bootstrap UCL	5.78E-04	95% Bootstrap t UCL	5.65E-04
95% H-UCL (Log ROS)	2.25E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.85E-04	Mean in Log Scale	-9.434
SD in Original Scale	0.00175	SD in Log Scale	1.62
95% t UCL (Assumes normality)	7.36E-04	95% H-Stat UCL	3.74E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	7.75E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.			

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***heptachlor epoxide***1024-57-3***t***ug/kg)

General Statistics		
Total Number of Observations	366	Number of Distinct Observations 293
Number of Detects	269	Number of Non-Detects 97
Number of Distinct Detects	229	Number of Distinct Non-Detects 86
Minimum Detect	0.043	Minimum Non-Detect 0.0243
Maximum Detect	130	Maximum Non-Detect 123.4
Variance Detects	336.7	Percent Non-Detects 26.50%
Mean Detects	5.537	SD Detects 18.35
Median Detects	0.761	CV Detects 3.314
Skewness Detects	4.41	Kurtosis Detects 20.16
Mean of Logged Detects	-0.193	SD of Logged Detects 1.556
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.323	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.436	Lilliefors GOF Test
5% Lilliefors Critical Value	0.054	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	4.217	Standard Error of Mean 0.849
SD	16.04	95% KM (BCA) UCL 5.705
95% KM (t) UCL	5.618	95% KM (Percentile Bootstrap) UCL 5.66
95% KM (z) UCL	5.615	95% KM Bootstrap t UCL 5.895
90% KM Chebyshev UCL	6.766	95% KM Chebyshev UCL 7.92
97.5% KM Chebyshev UCL	9.522	99% KM Chebyshev UCL 12.67
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	38.37	Anderson-Darling GOF Test
5% A-D Critical Value	0.857	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.319	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0601	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.353	k star (bias corrected MLE) 0.351
Theta hat (MLE)	15.7	Theta star (bias corrected MLE) 15.77
nu hat (MLE)	189.7	nu star (bias corrected) 188.9
MLE Mean (bias corrected)	5.537	MLE Sd (bias corrected) 9.344
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0691	nu hat (KM) 50.6
Approximate Chi Square Value (50.60, α)	35.27	Adjusted Chi Square Value (50.60, β) 35.22
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.051	95% Gamma Adjusted KM-UCL (use when $n < 50$) 6.06
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 4.075
Maximum	130	Median 0.426
SD	15.91	CV 3.905
k hat (MLE)	0.257	k star (bias corrected MLE) 0.256
Theta hat (MLE)	15.87	Theta star (bias corrected MLE) 15.89
nu hat (MLE)	187.9	nu star (bias corrected) 187.7
MLE Mean (bias corrected)	4.075	MLE Sd (bias corrected) 8.047
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (187.71, α)	157	Adjusted Chi Square Value (187.71, β) 156.9
95% Gamma Approximate UCL (use when $n \geq 50$)	4.871	95% Gamma Adjusted UCL (use when $n < 50$) 4.875
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.135	Lilliefors GOF Test
5% Lilliefors Critical Value	0.054	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	4.105	Mean in Log Scale -0.788
SD in Original Scale	15.9	SD in Log Scale 1.728
95% t UCL (assumes normality of ROS data)	5.476	95% Percentile Bootstrap UCL 5.577
95% BCA Bootstrap UCL	5.917	95% Bootstrap t UCL 5.708
95% H-UCL (Log ROS)	2.613	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	

Mean in Original Scale	5.938	Mean in Log Scale	-0.504
SD in Original Scale	18.01	SD in Log Scale	1.848
95% t UCL (Assumes normality)	7.49	95% H-Stat UCL	4.431
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
97.5% KM (Chebyshev) UCL	9.522

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***heptachlor***76-44-8***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	364	Number of Distinct Observations	331
Number of Detects	82	Number of Non-Detects	282
Number of Distinct Detects	82	Number of Distinct Non-Detects	255
Minimum Detect	4.78E-06	Minimum Non-Detect	2.13E-06
Maximum Detect	0.0103	Maximum Non-Detect	0.0142
Variance Detects	4.07E-06	Percent Non-Detects	77.47%
Mean Detects	6.08E-04	SD Detects	0.00202
Median Detects	2.54E-05	CV Detects	3.32
Skewness Detects	3.939	Kurtosis Detects	14.82
Mean of Logged Detects	-9.931	SD of Logged Detects	1.781

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.334	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.429	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0978	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.51E-04	Standard Error of Mean	5.40E-05
SD	0.001	95% KM (BCA) UCL	2.46E-04
95% KM (t) UCL	2.40E-04	95% KM (Percentile Bootstrap) UCL	2.45E-04
95% KM (z) UCL	2.40E-04	95% KM Bootstrap t UCL	2.93E-04
90% KM Chebyshev UCL	3.13E-04	95% KM Chebyshev UCL	3.86E-04
97.5% KM Chebyshev UCL	4.88E-04	99% KM Chebyshev UCL	6.89E-04

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	14.86 Anderson-Darling GOF Test
5% A-D Critical Value	0.877 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.362 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.108 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.277	k star (bias corrected MLE)	0.275
Theta hat (MLE)	0.0022	Theta star (bias corrected MLE)	0.00221
nu hat (MLE)	45.38	nu star (bias corrected)	45.06
MLE Mean (bias corrected)	6.08E-04	MLE Sd (bias corrected)	0.00116

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0226	nu hat (KM)	16.43
Approximate Chi Square Value (16.43, α)	8.27	Adjusted Chi Square Value (16.43, β)	8.247
95% Gamma Approximate KM-UCL (use when n>=50)	3.00E-04	95% Gamma Adjusted KM-UCL (use when n<50)	3.01E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	4.78E-06	Mean	0.00788
Maximum	0.0103	Median	0.01
SD	0.00404	CV	0.513
k hat (MLE)	0.637	k star (bias corrected MLE)	0.633
Theta hat (MLE)	0.0124	Theta star (bias corrected MLE)	0.0124
nu hat (MLE)	463.5	nu star (bias corrected)	461.1
MLE Mean (bias corrected)	0.00788	MLE Sd (bias corrected)	0.00991
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (461.06, α)	412.3	Adjusted Chi Square Value (461.06, β)	412.1
95% Gamma Approximate UCL (use when n>=50)	0.00882	95% Gamma Adjusted UCL (use when n<50)	0.00882

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.224	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0978	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.40E-04	Mean in Log Scale	-12.15
SD in Original Scale	9.86E-04	SD in Log Scale	1.579
95% t UCL (assumes normality of ROS data)	2.25E-04	95% Percentile Bootstrap UCL	2.33E-04
95% BCA Bootstrap UCL	2.62E-04	95% Bootstrap t UCL	2.80E-04
95% H-UCL (Log ROS)	2.28E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.87E-04	Mean in Log Scale	-10.45
SD in Original Scale	0.00155	SD in Log Scale	1.823
95% t UCL (Assumes normality)	6.20E-04	95% H-Stat UCL	2.02E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	3.86E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***heptachlor***76-44-8***t***ug/kg)			
General Statistics			
Total Number of Observations	364	Number of Distinct Observations	258
Number of Detects	82	Number of Non-Detects	282
Number of Distinct Detects	74	Number of Distinct Non-Detects	202
Minimum Detect	0.0252	Minimum Non-Detect	0.0097
Maximum Detect	126.5	Maximum Non-Detect	123.4
Variance Detects	648.1	Percent Non-Detects	77.47%
Mean Detects	7.487	SD Detects	25.46
Median Detects	0.262	CV Detects	3.4
Skewness Detects	3.892	Kurtosis Detects	14.24
Mean of Logged Detects	-0.787	SD of Logged Detects	1.907
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	3.26E-01	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.431	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0978	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.766	Standard Error of Mean	0.661
SD	12.46	95% KM (BCA) UCL	2.977
95% KM (t) UCL	2.856	95% KM (Percentile Bootstrap) UCL	2.894
95% KM (z) UCL	2.853	95% KM Bootstrap t UCL	3.456
90% KM Chebyshev UCL	3.748	95% KM Chebyshev UCL	4.647
97.5% KM Chebyshev UCL	5.893	99% KM Chebyshev UCL	8.342
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	14.74	Anderson-Darling GOF Test	
5% A-D Critical Value	0.889	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.371	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.108	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.253	k star (bias corrected MLE)	0.252
Theta hat (MLE)	29.58	Theta star (bias corrected MLE)	29.71
nu hat (MLE)	41.51	nu star (bias corrected)	41.33
MLE Mean (bias corrected)	7.487	MLE Sd (bias corrected)	14.91
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0201	nu hat (KM)	14.61
Approximate Chi Square Value (14.61, α)	6.99	Adjusted Chi Square Value (14.61, β)	6.969
95% Gamma Approximate KM-UCL (use when n>=50)	3.69	95% Gamma Adjusted KM-UCL (use when n<50)	3.701
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	1.694
Maximum	126.5 Median	0.01
SD	12.43 CV	7.334
k hat (MLE)	0.176 k star (bias corrected MLE)	0.176
Theta hat (MLE)	9.643 Theta star (bias corrected MLE)	9.622
nu hat (MLE)	127.9 nu star (bias corrected)	128.2
MLE Mean (bias corrected)	1.694 MLE Sd (bias corrected)	4.038
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (128.20, α)	103 Adjusted Chi Square Value (128.20, β)	103
95% Gamma Approximate UCL (use when n>=50)	2.11E+00 95% Gamma Adjusted UCL (use when n<50)	2.11
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.21 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0978 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.7 Mean in Log Scale	-3.737
SD in Original Scale	12.43 SD in Log Scale	2.049
95% t UCL (assumes normality of ROS data)	2.774 95% Percentile Bootstrap UCL	2.948
95% BCA Bootstrap UCL	3.143 95% Bootstrap t UCL	3.502
95% H-UCL (Log ROS)	0.273	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	5.069 Mean in Log Scale	-1.517
SD in Original Scale	16.89 SD in Log Scale	1.976
95% t UCL (Assumes normality)	6.528 95% H-Stat UCL	2.129
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	4.647	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***hexachlorobenzene***118-74-1***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	365
Number of Detects	230 Number of Non-Detects	136
Number of Distinct Detects	230 Number of Distinct Non-Detects	135
Minimum Detect	9.64E-05 Minimum Non-Detect	5.28E-05
Maximum Detect	0.0181 Maximum Non-Detect	1.209
Variance Detects	1.72E-06 Percent Non-Detects	37.16%
Mean Detects	7.91E-04 SD Detects	0.00131
Median Detects	5.92E-04 CV Detects	1.657
Skewness Detects	10.53 Kurtosis Detects	135.9
Mean of Logged Detects	-7.523 SD of Logged Detects	0.806
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.377 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.299 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0584 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	7.64E-04 Standard Error of Mean	7.92E-05
SD	0.00125 95% KM (BCA) UCL	9.20E-04
95% KM (t) UCL	8.95E-04 95% KM (Percentile Bootstrap) UCL	9.07E-04
95% KM (z) UCL	8.94E-04 95% KM Bootstrap t UCL	0.00101
90% KM Chebyshev UCL	0.001 95% KM Chebyshev UCL	0.00111
97.5% KM Chebyshev UCL	0.00126 99% KM Chebyshev UCL	0.00155
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.66 Anderson-Darling GOF Test	
5% A-D Critical Value	0.773 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0952 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0614 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.46 k star (bias corrected MLE)	1.444
Theta hat (MLE)	5.41E-04 Theta star (bias corrected MLE)	5.48E-04

nu hat (MLE)	671.6	nu star (bias corrected)	664.2
MLE Mean (bias corrected)	7.91E-04	MLE Sd (bias corrected)	6.58E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.371	nu hat (KM)	271.7
Approximate Chi Square Value (271.67, α)	234.5	Adjusted Chi Square Value (271.67, β)	234.4
95% Gamma Approximate KM-UCL (use when n>=50)	8.85E-04	95% Gamma Adjusted KM-UCL (use when n<50)	8.86E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	9.64E-05	Mean	0.00421
Maximum	0.0181	Median	0.00101
SD	0.00458	CV	1.086
k hat (MLE)	0.633	k star (bias corrected MLE)	0.629
Theta hat (MLE)	0.00666	Theta star (bias corrected MLE)	0.00669
nu hat (MLE)	463.2	nu star (bias corrected)	460.7
MLE Mean (bias corrected)	0.00421	MLE Sd (bias corrected)	0.00531
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (460.69, α)	411.9	Adjusted Chi Square Value (460.69, β)	411.7
95% Gamma Approximate UCL (use when n>=50)	0.00471	95% Gamma Adjusted UCL (use when n<50)	0.00471
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0574	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0584	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6.79E-04	Mean in Log Scale	-7.575
SD in Original Scale	0.00105	SD in Log Scale	0.685
95% t UCL (assumes normality of ROS data)	7.70E-04	95% Percentile Bootstrap UCL	7.79E-04
95% BCA Bootstrap UCL	8.32E-04	95% Bootstrap t UCL	8.63E-04
95% H-UCL (Log ROS)	6.94E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-7.58	95% H-UCL (KM -Log)	8.07E-04
KM SD (logged)	0.857	95% Critical H Value (KM-Log)	2.016
KM Standard Error of Mean (logged)	0.0558		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0391	Mean in Log Scale	-6.108
SD in Original Scale	0.112	SD in Log Scale	2.307
95% t UCL (Assumes normality)	0.0488	95% H-Stat UCL	0.0482
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	9.20E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***hexachlorobenzene***118-74-1***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	294
Number of Detects	230	Number of Non-Detects	136
Number of Distinct Detects	208	Number of Distinct Non-Detects	87
Minimum Detect	0.312	Minimum Non-Detect	0.0233
Maximum Detect	151	Maximum Non-Detect	14650
Variance Detects	139.5	Percent Non-Detects	37.16%
Mean Detects	7.523	SD Detects	11.81
Median Detects	5.71	CV Detects	1.57
Skewness Detects	8.41E+00	Kurtosis Detects	9.63E+01
Mean of Logged Detects	1.432	SD of Logged Detects	1.149
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.481	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.271	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0584	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			

Mean	7.226	Standard Error of Mean	0.698
SD	11.17	95% KM (BCA) UCL	8.442
95% KM (t) UCL	8.377	95% KM (Percentile Bootstrap) UCL	8.53
95% KM (z) UCL	8.374	95% KM Bootstrap t UCL	8.941
90% KM Chebyshev UCL	9.32	95% KM Chebyshev UCL	10.27
97.5% KM Chebyshev UCL	11.58	99% KM Chebyshev UCL	14.17

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.142	Anderson-Darling GOF Test	
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0853	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.062	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.986	k star (bias corrected MLE)	0.976
Theta hat (MLE)	7.628	Theta star (bias corrected MLE)	7.705
nu hat (MLE)	453.7	nu star (bias corrected)	449.1
MLE Mean (bias corrected)	7.523	MLE Sd (bias corrected)	7.613

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.418	nu hat (KM)	306.1
Approximate Chi Square Value (306.11, α)	266.6	Adjusted Chi Square Value (306.11, β)	266.4
95% Gamma Approximate KM-UCL (use when n>=50)	8.298	95% Gamma Adjusted KM-UCL (use when n<50)	8.303

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	6.443
Maximum	151	Median	4.233
SD	9.726	CV	1.509
k hat (MLE)	0.849	k star (bias corrected MLE)	0.844
Theta hat (MLE)	7.587	Theta star (bias corrected MLE)	7.633
nu hat (MLE)	621.6	nu star (bias corrected)	617.9
MLE Mean (bias corrected)	6.44E+00	MLE Sd (bias corrected)	7.013
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (617.88, α)	561.2	Adjusted Chi Square Value (617.88, β)	561
95% Gamma Approximate UCL (use when n>=50)	7.094	95% Gamma Adjusted UCL (use when n<50)	7.096

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0584	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6.306	Mean in Log Scale	1.357
SD in Original Scale	9.631	SD in Log Scale	1.022
95% t UCL (assumes normality of ROS data)	7.136	95% Percentile Bootstrap UCL	7.157
95% BCA Bootstrap UCL	7.511	95% Bootstrap t UCL	7.691
95% H-UCL (Log ROS)	7.348		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	392.2	Mean in Log Scale	2.821
SD in Original Scale	1190	SD in Log Scale	2.476
95% t UCL (Assumes normality)	494.7	95% H-Stat UCL	573.5

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	10.27
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***hexachlorocyclohexane (bhc), alpha-***319-84-6***t***mg/kg (at 1% toc))

General Statistics

Total Number of Observations	359	Number of Distinct Observations	324
Number of Detects	147	Number of Non-Detects	212
Number of Distinct Detects	136	Number of Distinct Non-Detects	195
Minimum Detect	4.23E-06	Minimum Non-Detect	2.70E-06
Maximum Detect	0.00788	Maximum Non-Detect	0.0142
Variance Detects	7.77E-07	Percent Non-Detects	59.05%
Mean Detects	1.55E-04	SD Detects	8.81E-04

Median Detects	2.31E-05	CV Detects	5.674
Skewness Detects	7.638	Kurtosis Detects	59.8
Mean of Logged Detects	-10.55	SD of Logged Detects	1.071
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.167	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.478	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0731	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.38E-05	Standard Error of Mean	3.20E-05
SD	5.85E-04	95% KM (BCA) UCL	1.34E-04
95% KM (t) UCL	1.27E-04	95% KM (Percentile Bootstrap) UCL	1.31E-04
95% KM (z) UCL	1.26E-04	95% KM Bootstrap t UCL	4.91E-04
90% KM Chebyshev UCL	1.70E-04	95% KM Chebyshev UCL	2.13E-04
97.5% KM Chebyshev UCL	2.74E-04	99% KM Chebyshev UCL	3.92E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	33.5	Anderson-Darling GOF Test	
5% A-D Critical Value	0.85	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.402	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0831	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.374	k star (bias corrected MLE)	0.371
Theta hat (MLE)	4.15E-04	Theta star (bias corrected MLE)	4.19E-04
nu hat (MLE)	109.9	nu star (bias corrected)	109
MLE Mean (bias corrected)	1.55E-04	MLE Sd (bias corrected)	2.55E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0159	nu hat (KM)	11.41
Approximate Chi Square Value (11.41, α)	4.841	Adjusted Chi Square Value (11.41, β)	4.824
95% Gamma Approximate KM-UCL (use when n>=50)	1.74E-04	95% Gamma Adjusted KM-UCL (use when n<50)	1.75E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	4.23E-06	Mean	0.00597
Maximum	0.01	Median	0.01
SD	0.00488	CV	0.818
k hat (MLE)	0.351	k star (bias corrected MLE)	0.349
Theta hat (MLE)	0.017	Theta star (bias corrected MLE)	0.0171
nu hat (MLE)	251.7	nu star (bias corrected)	250.9
MLE Mean (bias corrected)	0.00597	MLE Sd (bias corrected)	0.0101
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (250.92, α)	215.2	Adjusted Chi Square Value (250.92, β)	215.1
95% Gamma Approximate UCL (use when n>=50)	0.00696	95% Gamma Adjusted UCL (use when n<50)	0.00696
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.164	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0731	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6.81E-05	Mean in Log Scale	-11.36
SD in Original Scale	5.68E-04	SD in Log Scale	1.04
95% t UCL (assumes normality of ROS data)	1.17E-04	95% Percentile Bootstrap UCL	1.25E-04
95% BCA Bootstrap UCL	1.46E-04	95% Bootstrap t UCL	4.08E-04
95% H-UCL (Log ROS)	2.26E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.27E-04	Mean in Log Scale	-10.58
SD in Original Scale	0.00135	SD in Log Scale	1.81
95% t UCL (Assumes normality)	5.45E-04	95% H-Stat UCL	1.73E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	1.34E-04		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***hexachlorocyclohexane (bhc), alpha-***319-84-6***t***ug/kg)

General Statistics		
Total Number of Observations	359	Number of Distinct Observations 247
Number of Detects	147	Number of Non-Detects 212
Number of Distinct Detects	123	Number of Distinct Non-Detects 161
Minimum Detect	0.041	Minimum Non-Detect 0.0345
Maximum Detect	69.2	Maximum Non-Detect 123.4
Variance Detects	85.95	Percent Non-Detects 59.05%
Mean Detects	1.62	SD Detects 9.271
Median Detects	0.148	CV Detects 5.723
Skewness Detects	6.809	Kurtosis Detects 45.35
Mean of Logged Detects	-1.682	SD of Logged Detects 1.166
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.165	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.477	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0731	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.763	Standard Error of Mean 0.342
SD	6.198	95% KM (BCA) UCL 1.348
95% KM (t) UCL	1.326	95% KM (Percentile Bootstrap) UCL 1.334
95% KM (z) UCL	1.325	95% KM Bootstrap t UCL 5.713
90% KM Chebyshev UCL	1.787	95% KM Chebyshev UCL 2.251
97.5% KM Chebyshev UCL	2.896	99% KM Chebyshev UCL 4.161
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	36.3	Anderson-Darling GOF Test
5% A-D Critical Value	0.864	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.395	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0838	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.316	k star (bias corrected MLE) 0.314
Theta hat (MLE)	5.128	Theta star (bias corrected MLE) 5.159
nu hat (MLE)	92.88	nu star (bias corrected) 92.32
MLE Mean (bias corrected)	1.62	MLE Sd (bias corrected) 2.891
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0151	nu hat (KM) 10.87
Approximate Chi Square Value (10.87, α)	4.495	Adjusted Chi Square Value (10.87, β) 4.479
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.845	95% Gamma Adjusted KM-UCL (use when $n < 50$) 1.852
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.672
Maximum	69.2	Median 0.01
SD	5.973	CV 8.891
k hat (MLE)	0.239	k star (bias corrected MLE) 0.239
Theta hat (MLE)	2.807	Theta star (bias corrected MLE) 2.809
nu hat (MLE)	171.8	nu star (bias corrected) 171.7
MLE Mean (bias corrected)	0.672	MLE Sd (bias corrected) 1.374
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (171.72, α)	142.4	Adjusted Chi Square Value (171.72, β) 142.3
95% Gamma Approximate UCL (use when $n \geq 50$)	0.81	95% Gamma Adjusted UCL (use when $n < 50$) 0.811
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.181	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0731	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.7	Mean in Log Scale -2.432
SD in Original Scale	5.97	SD in Log Scale 1.076
95% t UCL (assumes normality of ROS data)	1.219	95% Percentile Bootstrap UCL 1.255
95% BCA Bootstrap UCL	1.461	95% Bootstrap t UCL 1.426
95% H-UCL (Log ROS)	0.177	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	

Mean in Original Scale	4.259	Mean in Log Scale	-1.65
SD in Original Scale	13.47	SD in Log Scale	1.876
95% t UCL (Assumes normality)	5.431	95% H-Stat UCL	1.498
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	1.348

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***hexachlorocyclohexane (bhc), beta-***319-85-7***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	365	Number of Distinct Observations	334
Number of Detects	131	Number of Non-Detects	234
Number of Distinct Detects	125	Number of Distinct Non-Detects	213
Minimum Detect	5.65E-06	Minimum Non-Detect	7.36E-06
Maximum Detect	0.0125	Maximum Non-Detect	0.0142
Variance Detects	2.88E-06	Percent Non-Detects	64.11%
Mean Detects	3.24E-04	SD Detects	0.0017
Median Detects	2.57E-05	CV Detects	5.24
Skewness Detects	6.264	Kurtosis Detects	39.99
Mean of Logged Detects	-10.31	SD of Logged Detects	1.226

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.191
5% Shapiro Wilk P Value	0
Lilliefors Test Statistic	0.493
5% Lilliefors Critical Value	0.0774
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.29E-04	Standard Error of Mean	5.48E-05
SD	0.00103	95% KM (BCA) UCL	2.43E-04
95% KM (t) UCL	2.19E-04	95% KM (Percentile Bootstrap) UCL	2.28E-04
95% KM (z) UCL	2.19E-04	95% KM Bootstrap t UCL	3.68E-04
90% KM Chebyshev UCL	2.93E-04	95% KM Chebyshev UCL	3.67E-04
97.5% KM Chebyshev UCL	4.71E-04	99% KM Chebyshev UCL	6.74E-04

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	32.79
5% A-D Critical Value	0.867
K-S Test Statistic	0.381
5% K-S Critical Value	0.0884
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.303	k star (bias corrected MLE)	0.301
Theta hat (MLE)	0.00107	Theta star (bias corrected MLE)	0.00108
nu hat (MLE)	79.29	nu star (bias corrected)	78.81
MLE Mean (bias corrected)	3.24E-04	MLE Sd (bias corrected)	5.91E-04

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0155	nu hat (KM)	11.32
Approximate Chi Square Value (11.32, α)	4.783	Adjusted Chi Square Value (11.32, β)	4.766
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	3.04E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	3.05E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	5.65E-06	Mean	0.00653
Maximum	0.0125	Median	0.01
SD	0.00476	CV	0.729
k hat (MLE)	0.405	k star (bias corrected MLE)	0.404
Theta hat (MLE)	0.0161	Theta star (bias corrected MLE)	0.0162
nu hat (MLE)	295.7	nu star (bias corrected)	294.6
MLE Mean (bias corrected)	0.00653	MLE Sd (bias corrected)	0.0103
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (294.63, α)	255.9	Adjusted Chi Square Value (294.63, β)	255.7
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00752	95% Gamma Adjusted UCL (use when $n < 50$)	0.00752

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.189	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0774	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.22E-04	Mean in Log Scale	-11.17
SD in Original Scale	0.00103	SD in Log Scale	1.047
95% t UCL (assumes normality of ROS data)	2.11E-04	95% Percentile Bootstrap UCL	2.22E-04
95% BCA Bootstrap UCL	2.57E-04	95% Bootstrap t UCL	3.64E-04
95% H-UCL (Log ROS)	2.74E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.63E-04	Mean in Log Scale	-10.39
SD in Original Scale	0.00156	SD in Log Scale	1.713
95% t UCL (Assumes normality)	5.98E-04	95% H-Stat UCL	1.71E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	2.43E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***hexachlorocyclohexane (bhc), beta-***319-85-7***t***ug/kg)			
General Statistics			
Total Number of Observations	365	Number of Distinct Observations	238
Number of Detects	131	Number of Non-Detects	234
Number of Distinct Detects	110	Number of Distinct Non-Detects	164
Minimum Detect	0.0564	Minimum Non-Detect	0.0429
Maximum Detect	149.6	Maximum Non-Detect	123.4
Variance Detects	410.3	Percent Non-Detects	64.11%
Mean Detects	3.743	SD Detects	20.26
Median Detects	0.203	CV Detects	5.412
Skewness Detects	6.124	Kurtosis Detects	37.4
Mean of Logged Detects	-1.306	SD of Logged Detects	1.323
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	1.88E-01	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.5	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0774	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.424	Standard Error of Mean	0.645
SD	12.25	95% KM (BCA) UCL	2.642
95% KM (t) UCL	2.489	95% KM (Percentile Bootstrap) UCL	2.566
95% KM (z) UCL	2.486	95% KM Bootstrap t UCL	3.25
90% KM Chebyshev UCL	3.36	95% KM Chebyshev UCL	4.237
97.5% KM Chebyshev UCL	5.455	99% KM Chebyshev UCL	7.846
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	33.02	Anderson-Darling GOF Test	
5% A-D Critical Value	0.884	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.402	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0891	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.268	k star (bias corrected MLE)	0.266
Theta hat (MLE)	13.99	Theta star (bias corrected MLE)	14.04
nu hat (MLE)	70.09	nu star (bias corrected)	69.82
MLE Mean (bias corrected)	3.743	MLE Sd (bias corrected)	7.25
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0135	nu hat (KM)	9.877
Approximate Chi Square Value (9.88, α)	3.865	Adjusted Chi Square Value (9.88, β)	3.85
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	3.64	95% Gamma Adjusted KM-UCL (use when $n < 50$)	3.654
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	1.35
Maximum	149.6 Median	0.01
SD	12.24 CV	9.067
k hat (MLE)	0.198 k star (bias corrected MLE)	0.198
Theta hat (MLE)	6.814 Theta star (bias corrected MLE)	6.807
nu hat (MLE)	144.6 nu star (bias corrected)	144.7
MLE Mean (bias corrected)	1.35 MLE Sd (bias corrected)	3.031
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (144.74, α)	117.9 Adjusted Chi Square Value (144.74, β)	117.8
95% Gamma Approximate UCL (use when $n \geq 50$)	1.66E+00 95% Gamma Adjusted UCL (use when $n < 50$)	1.658
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.16 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0774 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.385 Mean in Log Scale	-2.337
SD in Original Scale	12.23 SD in Log Scale	1.215
95% t UCL (assumes normality of ROS data)	2.441 95% Percentile Bootstrap UCL	2.608
95% BCA Bootstrap UCL	2.934 95% Bootstrap t UCL	3.214
95% H-UCL (Log ROS)	0.234	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	4.753 Mean in Log Scale	-1.464
SD in Original Scale	16.8 SD in Log Scale	1.817
95% t UCL (Assumes normality)	6.203 95% H-Stat UCL	1.59
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	2.642	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***hexachlorocyclohexane (bhc), delta-***319-86-8***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	365 Number of Distinct Observations	323
Number of Detects	92 Number of Non-Detects	273
Number of Distinct Detects	78 Number of Distinct Non-Detects	252
Minimum Detect	4.80E-06 Minimum Non-Detect	2.18E-06
Maximum Detect	0.0137 Maximum Non-Detect	0.0142
Variance Detects	8.52E-06 Percent Non-Detects	74.79%
Mean Detects	0.00115 SD Detects	0.00292
Median Detects	3.22E-05 CV Detects	2.546
Skewness Detects	2.619 Kurtosis Detects	5.913
Mean of Logged Detects	-9.633 SD of Logged Detects	2.117
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.447 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.481 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0924 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	3.04E-04 Standard Error of Mean	8.33E-05
SD	0.00156 95% KM (BCA) UCL	4.40E-04
95% KM (t) UCL	4.41E-04 95% KM (Percentile Bootstrap) UCL	4.52E-04
95% KM (z) UCL	4.41E-04 95% KM Bootstrap t UCL	4.74E-04
90% KM Chebyshev UCL	5.54E-04 95% KM Chebyshev UCL	6.67E-04
97.5% KM Chebyshev UCL	8.24E-04 99% KM Chebyshev UCL	0.00113
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	15.44 Anderson-Darling GOF Test	
5% A-D Critical Value	0.893 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.348 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.102 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.248 k star (bias corrected MLE)	0.248
Theta hat (MLE)	0.00461 Theta star (bias corrected MLE)	0.00463

nu hat (MLE)	45.72	nu star (bias corrected)	45.56
MLE Mean (bias corrected)	0.00115	MLE Sd (bias corrected)	0.0023
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0379	nu hat (KM)	27.7
Approximate Chi Square Value (27.70, α)	16.69	Adjusted Chi Square Value (27.70, β)	16.66
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	5.04E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	5.05E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	4.80E-06	Mean	0.00777
Maximum	0.0137	Median	0.01
SD	0.00412	CV	0.53
k hat (MLE)	0.608	k star (bias corrected MLE)	0.605
Theta hat (MLE)	0.0128	Theta star (bias corrected MLE)	0.0128
nu hat (MLE)	443.6	nu star (bias corrected)	441.3
MLE Mean (bias corrected)	0.00777	MLE Sd (bias corrected)	0.00999
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (441.34, α)	393.6	Adjusted Chi Square Value (441.34, β)	393.5
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00871	95% Gamma Adjusted UCL (use when $n < 50$)	0.00871
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.183	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0924	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.90E-04	Mean in Log Scale	-12.73
SD in Original Scale	0.00154	SD in Log Scale	2.19
95% t UCL (assumes normality of ROS data)	4.23E-04	95% Percentile Bootstrap UCL	4.24E-04
95% BCA Bootstrap UCL	4.54E-04	95% Bootstrap t UCL	4.63E-04
95% H-UCL (Log ROS)	4.77E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.48E-04	Mean in Log Scale	-10.62
SD in Original Scale	0.00184	SD in Log Scale	1.923
95% t UCL (Assumes normality)	7.06E-04	95% H-Stat UCL	2.10E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	8.24E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***hexachlorocyclohexane (bhc), delta-***319-86-8***t***ug/kg)			
General Statistics			
Total Number of Observations	365	Number of Distinct Observations	254
Number of Detects	92	Number of Non-Detects	273
Number of Distinct Detects	76	Number of Distinct Non-Detects	201
Minimum Detect	0.025	Minimum Non-Detect	0.02
Maximum Detect	160	Maximum Non-Detect	123.4
Variance Detects	1132	Percent Non-Detects	74.79%
Mean Detects	12.79	SD Detects	33.64
Median Detects	0.25	CV Detects	2.63
Skewness Detects	2.709	Kurtosis Detects	6.438
Mean of Logged Detects	-0.674	SD of Logged Detects	2.274
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	4.37E-01	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.477	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0924	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.325	Standard Error of Mean	0.943
SD	17.79	95% KM (BCA) UCL	5.002
95% KM (t) UCL	4.88	95% KM (Percentile Bootstrap) UCL	4.999
95% KM (z) UCL	4.876	95% KM Bootstrap t UCL	5.251

90% KM Chebyshev UCL	6.153	95% KM Chebyshev UCL	7.434
97.5% KM Chebyshev UCL	9.212	99% KM Chebyshev UCL	12.7

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	15.67 Anderson-Darling GOF Test
5% A-D Critical Value	0.904 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.353 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.103 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.224	k star (bias corrected MLE)	0.224
Theta hat (MLE)	57.04	Theta star (bias corrected MLE)	57.06
nu hat (MLE)	41.27	nu star (bias corrected)	41.26
MLE Mean (bias corrected)	12.79	MLE Sd (bias corrected)	27.02

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0349	nu hat (KM)	25.5
Approximate Chi Square Value (25.50, α)	15	Adjusted Chi Square Value (25.50, β)	14.97
95% Gamma Approximate KM-UCL (use when n>=50)	5.655	95% Gamma Adjusted KM-UCL (use when n<50)	5.667
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	3.232
Maximum	160	Median	0.01
SD	17.71	CV	5.481
k hat (MLE)	0.159	k star (bias corrected MLE)	0.16
Theta hat (MLE)	20.31	Theta star (bias corrected MLE)	20.24
nu hat (MLE)	116.2	nu star (bias corrected)	116.6
MLE Mean (bias corrected)	3.232	MLE Sd (bias corrected)	8.088
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (116.56, α)	92.64	Adjusted Chi Square Value (116.56, β)	92.55
95% Gamma Approximate UCL (use when n>=50)	4.07E+00	95% Gamma Adjusted UCL (use when n<50)	4.07

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.203 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0924 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	3.233	Mean in Log Scale	-3.951
SD in Original Scale	17.71	SD in Log Scale	2.423
95% t UCL (assumes normality of ROS data)	4.762	95% Percentile Bootstrap UCL	4.69
95% BCA Bootstrap UCL	5.053	95% Bootstrap t UCL	5.195
95% H-UCL (Log ROS)	0.569		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.691	Mean in Log Scale	-1.688
SD in Original Scale	20.08	SD in Log Scale	2.006
95% t UCL (Assumes normality)	7.424	95% H-Stat UCL	1.917
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	9.212		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***hexachlorocyclohexane (bhc), gamma- (lindane)***58-89-9***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	365	Number of Distinct Observations	330
Number of Detects	51	Number of Non-Detects	314
Number of Distinct Detects	47	Number of Distinct Non-Detects	289
Minimum Detect	9.30E-06	Minimum Non-Detect	3.94E-06
Maximum Detect	0.0105	Maximum Non-Detect	0.0142
Variance Detects	4.74E-06	Percent Non-Detects	86.03%
Mean Detects	5.84E-04	SD Detects	0.00218
Median Detects	3.03E-05	CV Detects	3.728
Skewness Detects	3.937	Kurtosis Detects	14.3
Mean of Logged Detects	-9.979	SD of Logged Detects	1.565

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.282	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.517	Lilliefors GOF Test
5% Lilliefors Critical Value	0.124	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	9.43E-05	Standard Error of Mean 4.53E-05
SD	8.43E-04	95% KM (BCA) UCL 1.95E-04
95% KM (t) UCL	1.69E-04	95% KM (Percentile Bootstrap) UCL 1.74E-04
95% KM (z) UCL	1.69E-04	95% KM Bootstrap t UCL 0.00199
90% KM Chebyshev UCL	2.30E-04	95% KM Chebyshev UCL 2.92E-04
97.5% KM Chebyshev UCL	3.77E-04	99% KM Chebyshev UCL 5.45E-04
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	11.37	Anderson-Darling GOF Test
5% A-D Critical Value	0.874	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.399	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.136	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.276	k star (bias corrected MLE) 0.273
Theta hat (MLE)	0.00212	Theta star (bias corrected MLE) 0.00214
nu hat (MLE)	28.15	nu star (bias corrected) 27.82
MLE Mean (bias corrected)	5.84E-04	MLE Sd (bias corrected) 0.00112
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0125	nu hat (KM) 9.149
Approximate Chi Square Value (9.15, α)	3.417	Adjusted Chi Square Value (9.15, β) 3.403
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.53E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$) 2.54E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	9.30E-06	Mean 0.00868
Maximum	0.0105	Median 0.01
SD	0.00337	CV 0.388
k hat (MLE)	0.952	k star (bias corrected MLE) 0.946
Theta hat (MLE)	0.00912	Theta star (bias corrected MLE) 0.00918
nu hat (MLE)	695.1	nu star (bias corrected) 690.7
MLE Mean (bias corrected)	0.00868	MLE Sd (bias corrected) 0.00893
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (690.72, α)	630.7	Adjusted Chi Square Value (690.72, β) 630.5
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00951	95% Gamma Adjusted UCL (use when $n < 50$) 0.00951
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.187	Lilliefors GOF Test
5% Lilliefors Critical Value	0.124	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	8.53E-05	Mean in Log Scale -12.1
SD in Original Scale	8.32E-04	SD in Log Scale 1.107
95% t UCL (assumes normality of ROS data)	1.57E-04	95% Percentile Bootstrap UCL 1.64E-04
95% BCA Bootstrap UCL	1.97E-04	95% Bootstrap t UCL 1.87E-04
95% H-UCL (Log ROS)	1.16E-05	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	4.41E-04	Mean in Log Scale -10.36
SD in Original Scale	0.00144	SD in Log Scale 1.679
95% t UCL (Assumes normality)	5.66E-04	95% H-Stat UCL 1.65E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	2.92E-04	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***hexachlorocyclohexane (bhc), gamma- (lindane)***58-89-9***t***ug/kg)

General Statistics			
Total Number of Observations	365	Number of Distinct Observations	234
Number of Detects	51	Number of Non-Detects	314
Number of Distinct Detects	43	Number of Distinct Non-Detects	204
Minimum Detect	0.054	Minimum Non-Detect	0.0395
Maximum Detect	97.46	Maximum Non-Detect	123.4
Variance Detects	463.3	Percent Non-Detects	86.03%
Mean Detects	5.754	SD Detects	21.52
Median Detects	0.306	CV Detects	3.74
Skewness Detects	3.92	Kurtosis Detects	14.08
Mean of Logged Detects	-0.927	SD of Logged Detects	1.655
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	2.79E-01	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.494	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.124	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.903	Standard Error of Mean	0.447
SD	8.324	95% KM (BCA) UCL	1.737
95% KM (t) UCL	1.639	95% KM (Percentile Bootstrap) UCL	1.678
95% KM (z) UCL	1.637	95% KM Bootstrap t UCL	2.036
90% KM Chebyshev UCL	2.243	95% KM Chebyshev UCL	2.849
97.5% KM Chebyshev UCL	3.692	99% KM Chebyshev UCL	5.346
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	10.79	Anderson-Darling GOF Test	
5% A-D Critical Value	0.881	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.382	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.136	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.263	k star (bias corrected MLE)	0.261
Theta hat (MLE)	21.87	Theta star (bias corrected MLE)	22.07
nu hat (MLE)	26.84	nu star (bias corrected)	26.59
MLE Mean (bias corrected)	5.754	MLE Sd (bias corrected)	11.27
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0118	nu hat (KM)	8.588
Approximate Chi Square Value (8.59, α)	3.08	Adjusted Chi Square Value (8.59, β)	3.067
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.517	95% Gamma Adjusted KM-UCL (use when $n < 50$)	2.528
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.813
Maximum	97.46	Median	0.01
SD	8.223	CV	10.12
k hat (MLE)	0.191	k star (bias corrected MLE)	0.191
Theta hat (MLE)	4.258	Theta star (bias corrected MLE)	4.252
nu hat (MLE)	139.3	nu star (bias corrected)	139.5
MLE Mean (bias corrected)	0.813	MLE Sd (bias corrected)	1.859
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (139.52, α)	113.2	Adjusted Chi Square Value (139.52, β)	113.1
95% Gamma Approximate UCL (use when $n \geq 50$)	1.00E+00	95% Gamma Adjusted UCL (use when $n < 50$)	1.002
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.182	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.124	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.835	Mean in Log Scale	-3.226
SD in Original Scale	8.221	SD in Log Scale	1.318
95% t UCL (assumes normality of ROS data)	1.545	95% Percentile Bootstrap UCL	1.617
95% BCA Bootstrap UCL	1.867	95% Bootstrap t UCL	1.928
95% H-UCL (Log ROS)	0.112		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.384	Mean in Log Scale	-1.435
SD in Original Scale	14.43	SD in Log Scale	1.753
95% t UCL (Assumes normality)	5.629	95% H-Stat UCL	1.436

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL2.849

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***indeno(1,2,3-c,d)pyrene***193-39-5***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	366	Number of Distinct Observations366
Number of Detects	359	Number of Non-Detects7
Number of Distinct Detects	359	Number of Distinct Non-Detects7
Minimum Detect	0.0559	Minimum Non-Detect0.835
Maximum Detect	1.699	Maximum Non-Detect1.209
Variance Detects	0.0352	Percent Non-Detects1.91%
Mean Detects	0.329	SD Detects0.187
Median Detects	0.285	CV Detects0.571
Skewness Detects	2.703	Kurtosis Detects12.63
Mean of Logged Detects	-1.236	SD of Logged Detects0.484
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.806	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.12	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.328	Standard Error of Mean0.00983
SD	0.187	95% KM (BCA) UCL0.346
95% KM (t) UCL	0.345	95% KM (Percentile Bootstrap) UCL0.344
95% KM (z) UCL	0.344	95% KM Bootstrap t UCL0.347
90% KM Chebyshev UCL	0.358	95% KM Chebyshev UCL0.371
97.5% KM Chebyshev UCL	0.39	99% KM Chebyshev UCL0.426
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.684	Anderson-Darling GOF Test
5% A-D Critical Value	0.758	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0561	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0482	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	4.232	k star (bias corrected MLE)4.199
Theta hat (MLE)	0.0776	Theta star (bias corrected MLE)0.0783
nu hat (MLE)	3039	nu star (bias corrected)3015
MLE Mean (bias corrected)	0.329	MLE Sd (bias corrected)0.16
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	3.096	nu hat (KM)2266
Approximate Chi Square Value (N/A, α)	2157	Adjusted Chi Square Value (N/A, β)2156
95% Gamma Approximate KM-UCL (use when n>=50)	0.345	95% Gamma Adjusted KM-UCL (use when n<50)0.345
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0559	Mean0.328
Maximum	1.699	Median0.289
SD	0.186	CV0.566
k hat (MLE)	4.309	k star (bias corrected MLE)4.275
Theta hat (MLE)	0.0761	Theta star (bias corrected MLE)0.0767
nu hat (MLE)	3154	nu star (bias corrected)3129
MLE Mean (bias corrected)	0.328	MLE Sd (bias corrected)0.159
		Adjusted Level of Significance (β)0.0493
Approximate Chi Square Value (N/A, α)	3000	Adjusted Chi Square Value (N/A, β)3000
95% Gamma Approximate UCL (use when n>=50)	0.342	95% Gamma Adjusted UCL (use when n<50)0.342
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0298	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.328	Mean in Log Scale	-1.236
SD in Original Scale	0.186	SD in Log Scale	0.479
95% t UCL (assumes normality of ROS data)	0.344	95% Percentile Bootstrap UCL	0.344
95% BCA Bootstrap UCL	0.346	95% Bootstrap t UCL	0.345
95% H-UCL (Log ROS)	0.341		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-1.236	95% H-UCL (KM -Log)	0.341
KM SD (logged)	0.483	95% Critical H Value (KM-Log)	1.786
KM Standard Error of Mean (logged)	0.0255		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.332	Mean in Log Scale	-1.226
SD in Original Scale	0.187	SD in Log Scale	0.485
95% t UCL (Assumes normality)	0.348	95% H-Stat UCL	0.345
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.346		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***indeno(1,2,3-c,d)pyrene***193-39-5***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	295
Number of Detects	359	Number of Non-Detects	7
Number of Distinct Detects	288	Number of Distinct Non-Detects	7
Minimum Detect	91.9	Minimum Non-Detect	7633
Maximum Detect	26100	Maximum Non-Detect	14650
Variance Detects	6001995	Percent Non-Detects	1.91%
Mean Detects	2918	SD Detects	2450
Median Detects	2450	CV Detects	0.84
Skewness Detects	3.47E+00	Kurtosis Detects	2.43E+01
Mean of Logged Detects	7.688	SD of Logged Detects	0.8
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.783	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.143	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2914	Standard Error of Mean	128.2
SD	2436	95% KM (BCA) UCL	3131
95% KM (t) UCL	3125	95% KM (Percentile Bootstrap) UCL	3135
95% KM (z) UCL	3125	95% KM Bootstrap t UCL	3150
90% KM Chebyshev UCL	3298	95% KM Chebyshev UCL	3473
97.5% KM Chebyshev UCL	3715	99% KM Chebyshev UCL	4190
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.093	Anderson-Darling GOF Test	
5% A-D Critical Value	0.768	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0465	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0487	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.869	k star (bias corrected MLE)	1.855
Theta hat (MLE)	1561	Theta star (bias corrected MLE)	1573
nu hat (MLE)	1342	nu star (bias corrected)	1332
MLE Mean (bias corrected)	2918	MLE Sd (bias corrected)	2142
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.43	nu hat (KM)	1047
Approximate Chi Square Value (N/A, α)	972.8	Adjusted Chi Square Value (N/A, β)	972.5
95% Gamma Approximate KM-UCL (use when n>=50)	3136	95% Gamma Adjusted KM-UCL (use when n<50)	3137
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	91.9 Mean	2906
Maximum	26100 Median	2420
SD	2428 CV	0.835
k hat (MLE)	1.9 k star (bias corrected MLE)	1.886
Theta hat (MLE)	1530 Theta star (bias corrected MLE)	1541
nu hat (MLE)	1391 nu star (bias corrected)	1380
MLE Mean (bias corrected)	2.91E+03 MLE Sd (bias corrected)	2116
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1295 Adjusted Chi Square Value (N/A, β)	1295
95% Gamma Approximate UCL (use when n>=50)	3097 95% Gamma Adjusted UCL (use when n<50)	3098
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0664 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468 Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2903 Mean in Log Scale	7.687
SD in Original Scale	2429 SD in Log Scale	0.792
95% t UCL (assumes normality of ROS data)	3112 95% Percentile Bootstrap UCL	3122
95% BCA Bootstrap UCL	3138 95% Bootstrap t UCL	3139
95% H-UCL (Log ROS)	3239	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	7.687 95% H-UCL (KM -Log)	3256
KM SD (logged)	0.798 95% Critical H Value (KM-Log)	1.974
KM Standard Error of Mean (logged)	0.0422	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	2961 Mean in Log Scale	7.704
SD in Original Scale	2454 SD in Log Scale	0.801
95% t UCL (Assumes normality)	3172 95% H-Stat UCL	3319
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	3473 95% GROS Approximate Gamma UCL	3097
95% Approximate Gamma KM-UCL	3136	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***iron***7439-89-6***t***mg/kg)		
General Statistics		
Total Number of Observations	399 Number of Distinct Observations	234
	Number of Missing Observations	0
Minimum	2400 Mean	28597
Maximum	72400 Median	29300
SD	9176 Std. Error of Mean	#####
Coefficient of Variation	0.321 Skewness	0.182
Normal GOF Test		
Shapiro Wilk Test Statistic	0.977 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.0341 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0534 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0444 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	29354 95% Adjusted-CLT UCL (Chen-1995)	29357
	95% Modified-t UCL (Johnson-1978)	29355
Gamma GOF Test		
A-D Test Statistic	7.316 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.756 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0963 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0453 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	7.792 k star (bias corrected MLE)	7.735
Theta hat (MLE)	3670 Theta star (bias corrected MLE)	3697

nu hat (MLE)	6218	nu star (bias corrected)	6173
MLE Mean (bias corrected)	28597	MLE Sd (bias corrected)	10282
		Approximate Chi Square Value (0.05)	5991
Adjusted Level of Significance	0.0494	Adjusted Chi Square Value	5990
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	29464	95% Adjusted Gamma UCL (use when n<50)	29467
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.875	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.127	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0444	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.783	Mean of logged Data	10.2
Maximum of Logged Data	11.19	SD of logged Data	0.401
Assuming Lognormal Distribution			
95% H-UCL	30069	90% Chebyshev (MVUE) UCL	30838
95% Chebyshev (MVUE) UCL	31661	97.5% Chebyshev (MVUE) UCL	32803
99% Chebyshev (MVUE) UCL	35046		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	29352	95% Jackknife UCL	29354
95% Standard Bootstrap UCL	29352	95% Bootstrap-t UCL	29392
95% Hall's Bootstrap UCL	29418	95% Percentile Bootstrap UCL	29346
95% BCA Bootstrap UCL	29311		
90% Chebyshev(Mean, Sd) UCL	29975	95% Chebyshev(Mean, Sd) UCL	30599
97.5% Chebyshev(Mean, Sd) UCL	31465	99% Chebyshev(Mean, Sd) UCL	33167
Suggested UCL to Use			
95% Student's-t UCL	29354	or 95% Modified-t UCL	29355
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***iron***7439-89-6***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	399	Number of Distinct Observations	399
		Number of Missing Observations	0
Minimum	137.1	Mean	4367
Maximum	23097	Median	3555
SD	2801	Std. Error of Mean	140.2
Coefficient of Variation	0.642	Skewness	1.571
Normal GOF Test			
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.14	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0444	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	4598	95% Adjusted-CLT UCL (Chen-1995)	4609
		95% Modified-t UCL (Johnson-1978)	4600
Gamma GOF Test			
A-D Test Statistic	2.139	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.762	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0625	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0457	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.676	k star (bias corrected MLE)	2.658
Theta hat (MLE)	1631	Theta star (bias corrected MLE)	1643
nu hat (MLE)	2136	nu star (bias corrected)	2121
MLE Mean (bias corrected)	4367	MLE Sd (bias corrected)	2678
		Approximate Chi Square Value (0.05)	2015
Adjusted Level of Significance	0.0494	Adjusted Chi Square Value	2015

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	4596	95% Adjusted Gamma UCL (use when n<50)	4597
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.972	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.00115	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0334	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0444	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.921	Mean of logged Data	8.183
Maximum of Logged Data	10.05	SD of logged Data	0.661
Assuming Lognormal Distribution			
95% H-UCL	4742	90% Chebyshev (MVUE) UCL	4938
95% Chebyshev (MVUE) UCL	5158	97.5% Chebyshev (MVUE) UCL	5464
99% Chebyshev (MVUE) UCL	6065		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	4597	95% Jackknife UCL	4598
95% Standard Bootstrap UCL	4606	95% Bootstrap-t UCL	4610
95% Hall's Bootstrap UCL	4611	95% Percentile Bootstrap UCL	4595
95% BCA Bootstrap UCL	4620		
90% Chebyshev(Mean, Sd) UCL	4787	95% Chebyshev(Mean, Sd) UCL	4978
97.5% Chebyshev(Mean, Sd) UCL	5242	99% Chebyshev(Mean, Sd) UCL	5762
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	4978		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***isopropylbenzene (cumene)***98-82-8***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	160
Number of Detects	39	Number of Non-Detects	133
Number of Distinct Detects	38	Number of Distinct Non-Detects	125
Minimum Detect	7.57E-05	Minimum Non-Detect	1.60E-04
Maximum Detect	0.0898	Maximum Non-Detect	0.156
Variance Detects	5.40E-04	Percent Non-Detects	77.33%
Mean Detects	0.0154	SD Detects	0.0232
Median Detects	0.00103	CV Detects	1.505
Skewness Detects	1.789	Kurtosis Detects	2.78
Mean of Logged Detects	-6.189	SD of Logged Detects	2.488
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.713	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.268	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.142	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00382	Standard Error of Mean	0.00102
SD	0.0129	95% KM (BCA) UCL	0.00557
95% KM (t) UCL	0.0055	95% KM (Percentile Bootstrap) UCL	0.00553
95% KM (z) UCL	0.00549	95% KM Bootstrap t UCL	0.00604
90% KM Chebyshev UCL	0.00687	95% KM Chebyshev UCL	0.00826
97.5% KM Chebyshev UCL	0.0102	99% KM Chebyshev UCL	0.014
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.932	Anderson-Darling GOF Test	
5% A-D Critical Value	0.85	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.209	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.153	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.335	k star (bias corrected MLE)	0.327
Theta hat (MLE)	0.046	Theta star (bias corrected MLE)	0.0473
nu hat (MLE)	26.16	nu star (bias corrected)	25.48
MLE Mean (bias corrected)	0.0154	MLE Sd (bias corrected)	0.027
Gamma Kaplan-Meier (KM) Statistics			

k hat (KM)	0.0874	nu hat (KM)	30.08
Approximate Chi Square Value (30.08, α)	18.56	Adjusted Chi Square Value (30.08, β)	18.48
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00619	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00621
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	7.57E-05	Mean	0.0112
Maximum	0.0898	Median	0.01
SD	0.0112	CV	0.996
k hat (MLE)	1.19	k star (bias corrected MLE)	1.174
Theta hat (MLE)	0.00944	Theta star (bias corrected MLE)	0.00957
nu hat (MLE)	409.5	nu star (bias corrected)	403.7
MLE Mean (bias corrected)	0.0112	MLE Sd (bias corrected)	0.0104
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (403.72, α)	358.1	Adjusted Chi Square Value (403.72, β)	357.8
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0127	95% Gamma Adjusted UCL (use when $n < 50$)	0.0127

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.865	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.164	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.142	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.00366	Mean in Log Scale	-8.018
SD in Original Scale	0.0127	SD in Log Scale	1.567
95% t UCL (assumes normality of ROS data)	0.00526	95% Percentile Bootstrap UCL	0.0054
95% BCA Bootstrap UCL	0.00573	95% Bootstrap t UCL	0.00592
95% H-UCL (Log ROS)	0.00156		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00665	Mean in Log Scale	-7.349
SD in Original Scale	0.0168	SD in Log Scale	1.874
95% t UCL (Assumes normality)	0.00876	95% H-Stat UCL	0.00578
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	0.0102
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***isopropylbenzene (cumene)***98-82-8***t***ug/kg)

General Statistics

Total Number of Observations	172	Number of Distinct Observations	76
Number of Detects	39	Number of Non-Detects	133
Number of Distinct Detects	35	Number of Distinct Non-Detects	48
Minimum Detect	0.83	Minimum Non-Detect	1.7
Maximum Detect	832	Maximum Non-Detect	1700
Variance Detects	51887	Percent Non-Detects	77.33%
Mean Detects	160.3	SD Detects	227.8
Median Detects	11	CV Detects	1.421
Skewness Detects	1.594	Kurtosis Detects	2.077
Mean of Logged Detects	3.106	SD of Logged Detects	2.468

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.735	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.281	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.142	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	39.73	Standard Error of Mean	10.19
SD	128.7	95% KM (BCA) UCL	56.59
95% KM (t) UCL	56.59	95% KM (Percentile Bootstrap) UCL	57.14
95% KM (z) UCL	56.5	95% KM Bootstrap t UCL	62.85
90% KM Chebyshev UCL	70.3	95% KM Chebyshev UCL	84.15
97.5% KM Chebyshev UCL	103.4	99% KM Chebyshev UCL	141.1

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.385	Anderson-Darling GOF Test
5% A-D Critical Value	0.848	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.221	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.153	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.342	k star (bias corrected MLE) 0.333
Theta hat (MLE)	467.9	Theta star (bias corrected MLE) 480.9
nu hat (MLE)	26.71	nu star (bias corrected) 25.99
MLE Mean (bias corrected)	160.3	MLE Sd (bias corrected) 277.6
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0953	nu hat (KM) 32.78
Approximate Chi Square Value (32.78, α)	20.69	Adjusted Chi Square Value (32.78, β) 20.61
95% Gamma Approximate KM-UCL (use when n>=50)	62.95	95% Gamma Adjusted KM-UCL (use when n<50) 63.2
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 37.23
Maximum	832	Median 0.01
SD	126.6	CV 3.4
k hat (MLE)	0.127	k star (bias corrected MLE) 0.129
Theta hat (MLE)	292.4	Theta star (bias corrected MLE) 288.7
nu hat (MLE)	43.8	nu star (bias corrected) 44.37
MLE Mean (bias corrected)	37.23	MLE Sd (bias corrected) 103.7
		Adjusted Level of Significance (β) 0.0486
Approximate Chi Square Value (44.37, α)	30.09	Adjusted Chi Square Value (44.37, β) 29.99
95% Gamma Approximate UCL (use when n>=50)	54.9	95% Gamma Adjusted UCL (use when n<50) 55.08
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.838	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.199	Lilliefors GOF Test
5% Lilliefors Critical Value	0.142	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	38.68	Mean in Log Scale 1.108
SD in Original Scale	126.1	SD in Log Scale 1.897
95% t UCL (assumes normality of ROS data)	54.58	95% Percentile Bootstrap UCL 55.33
95% BCA Bootstrap UCL	60.21	95% Bootstrap t UCL 60.36
95% H-UCL (Log ROS)	28.64	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	69.32	Mean in Log Scale 1.583
SD in Original Scale	171.4	SD in Log Scale 2.04
95% t UCL (Assumes normality)	90.93	95% H-Stat UCL 64.79
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
97.5% KM (Chebyshev) UCL	103.4	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***lead***7439-92-1***t***mg/kg)		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 308
		Number of Missing Observations 0
Minimum	10.2	Mean 459.4
Maximum	3140	Median 377.5
SD	356.4	Std. Error of Mean 18.63
Coefficient of Variation	0.776	Skewness 2.033
Normal GOF Test		
Shapiro Wilk Test Statistic	0.861	Shapiro Wilk GOF Test

5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.122 Lilliefors GOF Test		
5% Lilliefors Critical Value	0.0463 Data Not Normal at 5% Significance Level		
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL	95% UCLs (Adjusted for Skewness)		
95% Student's-t UCL	490.2	95% Adjusted-CLT UCL (Chen-1995)	492.2
		95% Modified-t UCL (Johnson-1978)	490.5
Gamma GOF Test			
A-D Test Statistic	1.508 Anderson-Darling Gamma GOF Test		
5% A-D Critical Value	0.768 Data Not Gamma Distributed at 5% Significance Level		
K-S Test Statistic	0.0655 Kolmogrov-Smirnoff Gamma GOF Test		
5% K-S Critical Value	0.0482 Data Not Gamma Distributed at 5% Significance Level		
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.86	k star (bias corrected MLE)	1.846
Theta hat (MLE)	247	Theta star (bias corrected MLE)	248.8
nu hat (MLE)	1361	nu star (bias corrected)	1352
MLE Mean (bias corrected)	459.4	MLE Sd (bias corrected)	338.1
		Approximate Chi Square Value (0.05)	1267
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1267
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	490	95% Adjusted Gamma UCL (use when n<50)	490.2
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.976 Shapiro Wilk Lognormal GOF Test		
5% Shapiro Wilk P Value	0.0221 Data Not Lognormal at 5% Significance Level		
Lilliefors Test Statistic	0.0661 Lilliefors Lognormal GOF Test		
5% Lilliefors Critical Value	0.0463 Data Not Lognormal at 5% Significance Level		
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.322	Mean of logged Data	5.838
Maximum of Logged Data	8.052	SD of logged Data	0.809
Assuming Lognormal Distribution			
95% H-UCL	517.6	90% Chebyshev (MVUE) UCL	544.6
95% Chebyshev (MVUE) UCL	575.9	97.5% Chebyshev (MVUE) UCL	619.5
99% Chebyshev (MVUE) UCL	705		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	490.1	95% Jackknife UCL	490.2
95% Standard Bootstrap UCL	489.5	95% Bootstrap-t UCL	492.4
95% Hall's Bootstrap UCL	493.4	95% Percentile Bootstrap UCL	491.4
95% BCA Bootstrap UCL	492.5		
90% Chebyshev(Mean, Sd) UCL	515.3	95% Chebyshev(Mean, Sd) UCL	540.6
97.5% Chebyshev(Mean, Sd) UCL	575.8	99% Chebyshev(Mean, Sd) UCL	644.8
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	540.6		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***lead***7439-92-1***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	364
		Number of Missing Observations	0
Minimum	2.2	Mean	53.64
Maximum	579.2	Median	43.95
SD	42.12	Std. Error of Mean	2.202
Coefficient of Variation	0.785	Skewness	6.837
Normal GOF Test			
Shapiro Wilk Test Statistic	0.605 Shapiro Wilk GOF Test		
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.17 Lilliefors GOF Test		
5% Lilliefors Critical Value	0.0463 Data Not Normal at 5% Significance Level		
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	57.27	95% Adjusted-CLT UCL (Chen-1995)	58.1
		95% Modified-t UCL (Johnson-1978)	57.4
Gamma GOF Test			
A-D Test Statistic	4.59	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0854	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0478	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.167	k star (bias corrected MLE)	314.30%
Theta hat (MLE)	16.94	Theta star (bias corrected MLE)	17.07
nu hat (MLE)	2318	nu star (bias corrected)	2300
MLE Mean (bias corrected)	53.64	MLE Sd (bias corrected)	30.26
		Approximate Chi Square Value (0.05)	2190
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2190
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	56.35	95% Adjusted Gamma UCL (use when n<50)	56.36
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.958	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	2.59E-09	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.065	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	0.788	Mean of logged Data	3.816
Maximum of Logged Data	6.362	SD of logged Data	0.573
Assuming Lognormal Distribution			
95% H-UCL	56.57	90% Chebyshev (MVUE) UCL	58.7
95% Chebyshev (MVUE) UCL	61.05	97.5% Chebyshev (MVUE) UCL	64.3
99% Chebyshev (MVUE) UCL	70.7		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	57.26	95% Jackknife UCL	57.27
95% Standard Bootstrap UCL	57.31	95% Bootstrap-t UCL	58.6
95% Hall's Bootstrap UCL	60.14	95% Percentile Bootstrap UCL	57.35
95% BCA Bootstrap UCL	58.55		
90% Chebyshev(Mean, Sd) UCL	60.25	95% Chebyshev(Mean, Sd) UCL	63.24
97.5% Chebyshev(Mean, Sd) UCL	67.39	99% Chebyshev(Mean, Sd) UCL	75.55
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	63.24		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***lead-sem***7439-92-1sem***t***umol/g)			
General Statistics			
Total Number of Observations	84	Number of Distinct Observations	84
		Number of Missing Observations	0
Minimum	0.353	Mean	1.624
Maximum	4.233	Median	1.67
SD	0.912	Std. Error of Mean	0.0995
Coefficient of Variation	0.562	Skewness	0.442
Normal GOF Test			
Shapiro Wilk Test Statistic	0.939	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	8.76E-04	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0817	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0967	Data appear Normal at 5% Significance Level	
Data appear Approximate Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.789	95% Adjusted-CLT UCL (Chen-1995)	1.793
		95% Modified-t UCL (Johnson-1978)	1.79

Gamma GOF Test		
A-D Test Statistic	1.384	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.116	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0984	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	2.772	k star (bias corrected MLE)
Theta hat (MLE)	0.586	Theta star (bias corrected MLE)
nu hat (MLE)	465.7	nu star (bias corrected)
MLE Mean (bias corrected)	1.624	MLE Sd (bias corrected)
		Approximate Chi Square Value (0.05)
Adjusted Level of Significance	0.0471	Adjusted Chi Square Value
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	1.818	95% Adjusted Gamma UCL (use when n<50)
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	4.15E-06	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.148	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0967	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-1.043	Mean of logged Data
Maximum of Logged Data	1.443	SD of logged Data
Assuming Lognormal Distribution		
95% H-UCL	1.932	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	2.245	97.5% Chebyshev (MVUE) UCL
99% Chebyshev (MVUE) UCL	2.985	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	1.787	95% Jackknife UCL
95% Standard Bootstrap UCL	1.784	95% Bootstrap-t UCL
95% Hall's Bootstrap UCL	1.794	95% Percentile Bootstrap UCL
95% BCA Bootstrap UCL	1.793	
90% Chebyshev(Mean, Sd) UCL	1.922	95% Chebyshev(Mean, Sd) UCL
97.5% Chebyshev(Mean, Sd) UCL	2.245	99% Chebyshev(Mean, Sd) UCL
Suggested UCL to Use		
95% Student's-t UCL	1.789	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***magnesium***7439-95-4***t***mg/kg)		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations
		Number of Missing Observations
Minimum	1140	Mean
Maximum	22700	Median
SD	2989	Std. Error of Mean
Coefficient of Variation	0.288	Skewness
Normal GOF Test		
Shapiro Wilk Test Statistic	0.987	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0.745	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.0418	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0463	Data appear Normal at 5% Significance Level
Data appear Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	10645	95% Adjusted-CLT UCL (Chen-1995)
		95% Modified-t UCL (Johnson-1978)
Gamma GOF Test		
A-D Test Statistic	3.646	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.754	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0862	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0475	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics		
k hat (MLE)	10.34 k star (bias corrected MLE)	10.26
Theta hat (MLE)	1004 Theta star (bias corrected MLE)	1012
nu hat (MLE)	7573 nu star (bias corrected)	7512
MLE Mean (bias corrected)	10387 MLE Sd (bias corrected)	3243
	Approximate Chi Square Value (0.05)	7311
Adjusted Level of Significance	0.0493 Adjusted Chi Square Value	7311

Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	10672 95% Adjusted Gamma UCL (use when n<50)	10673

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.922 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0 Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.11 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463 Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level		

Lognormal Statistics		
Minimum of Logged Data	7.039 Mean of logged Data	9.199
Maximum of Logged Data	10.03 SD of logged Data	0.337

Assuming Lognormal Distribution		
95% H-UCL	10789 90% Chebyshev (MVUE) UCL	11032
95% Chebyshev (MVUE) UCL	11289 97.5% Chebyshev (MVUE) UCL	11645
99% Chebyshev (MVUE) UCL	12346	

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs		
95% CLT UCL	10644 95% Jackknife UCL	10645
95% Standard Bootstrap UCL	10641 95% Bootstrap-t UCL	10634
95% Hall's Bootstrap UCL	10649 95% Percentile Bootstrap UCL	10637
95% BCA Bootstrap UCL	10635	
90% Chebyshev(Mean, Sd) UCL	10856 95% Chebyshev(Mean, Sd) UCL	11069
97.5% Chebyshev(Mean, Sd) UCL	11363 99% Chebyshev(Mean, Sd) UCL	11942

Suggested UCL to Use		
95% Student's-t UCL	10645	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***magnesium***7439-95-4***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	366 Number of Distinct Observations	363
	Number of Missing Observations	0
Minimum	230.5 Mean	1504
Maximum	10857 Median	1306
SD	908.8 Std. Error of Mean	47.5
Coefficient of Variation	0.604 Skewness	3.961

Normal GOF Test		
Shapiro Wilk Test Statistic	0.784 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.113 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1582 95% Adjusted-CLT UCL (Chen-1995)	1592
	95% Modified-t UCL (Johnson-1978)	1584

Gamma GOF Test		
A-D Test Statistic	1.229 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.759 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0466 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0478 Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level		

Gamma Statistics		
k hat (MLE)	3.824 k star (bias corrected MLE)	3.794
Theta hat (MLE)	393.2 Theta star (bias corrected MLE)	396.3

nu hat (MLE)	2799	nu star (bias corrected)	2777
MLE Mean (bias corrected)	1504	MLE Sd (bias corrected)	771.9
		Approximate Chi Square Value (0.05)	2656
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2655
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	1572	95% Adjusted Gamma UCL (use when n<50)	1573
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.988	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.828	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0288	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	5.44	Mean of logged Data	7.179
Maximum of Logged Data	9.293	SD of logged Data	0.522
Assuming Lognormal Distribution			
95% H-UCL	1579	90% Chebyshev (MVUE) UCL	1633
95% Chebyshev (MVUE) UCL	1693	97.5% Chebyshev (MVUE) UCL	1775
99% Chebyshev (MVUE) UCL	1937		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1582	95% Jackknife UCL	1582
95% Standard Bootstrap UCL	1582	95% Bootstrap-t UCL	1590
95% Hall's Bootstrap UCL	1610	95% Percentile Bootstrap UCL	1582
95% BCA Bootstrap UCL	1597		
90% Chebyshev(Mean, Sd) UCL	1646	95% Chebyshev(Mean, Sd) UCL	1711
97.5% Chebyshev(Mean, Sd) UCL	1800	99% Chebyshev(Mean, Sd) UCL	1976
Suggested UCL to Use			
95% Approximate Gamma UCL	1572		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***manganese***7439-96-5***t***mg/kg)			
General Statistics			
Total Number of Observations	399	Number of Distinct Observations	283
		Number of Missing Observations	0
Minimum	16.5	Mean	282.7
Maximum	833	Median	260
SD	143	Std. Error of Mean	7.159
Coefficient of Variation	0.506	Skewness	0.558
Normal GOF Test			
Shapiro Wilk Test Statistic	0.95	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	8.88E-16	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.088	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0444	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	294.5	95% Adjusted-CLT UCL (Chen-1995)	294.7
		95% Modified-t UCL (Johnson-1978)	294.5
Gamma GOF Test			
A-D Test Statistic	1.619	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0552	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0455	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.543	k star (bias corrected MLE)	3.518
Theta hat (MLE)	79.78	Theta star (bias corrected MLE)	80.35
nu hat (MLE)	2827	nu star (bias corrected)	2807
MLE Mean (bias corrected)	282.7	MLE Sd (bias corrected)	150.7
		Approximate Chi Square Value (0.05)	2685
Adjusted Level of Significance	0.0494	Adjusted Chi Square Value	2685

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	295.5	95% Adjusted Gamma UCL (use when n<50)	295.6
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.951	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	2.33E-15	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0564	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0444	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.803	Mean of logged Data	5.497
Maximum of Logged Data	6.725	SD of logged Data	0.584
Assuming Lognormal Distribution			
95% H-UCL	305.2	90% Chebyshev (MVUE) UCL	316.4
95% Chebyshev (MVUE) UCL	328.8	97.5% Chebyshev (MVUE) UCL	346.1
99% Chebyshev (MVUE) UCL	379.9		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	294.5	95% Jackknife UCL	294.5
95% Standard Bootstrap UCL	294.2	95% Bootstrap-t UCL	294.5
95% Hall's Bootstrap UCL	294.4	95% Percentile Bootstrap UCL	294.2
95% BCA Bootstrap UCL	294.9		
90% Chebyshev(Mean, Sd) UCL	304.2	95% Chebyshev(Mean, Sd) UCL	313.9
97.5% Chebyshev(Mean, Sd) UCL	327.4	99% Chebyshev(Mean, Sd) UCL	353.9
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	313.9		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***manganese***7439-96-5***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	399	Number of Distinct Observations	399
		Number of Missing Observations	0
Minimum	0.943	Mean	51.35
Maximum	809.7	Median	28.59
SD	59.17	Std. Error of Mean	2.962
Coefficient of Variation	1.152	Skewness	5.82
Normal GOF Test			
Shapiro Wilk Test Statistic	0.662	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.202	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0444	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	56.24	95% Adjusted-CLT UCL (Chen-1995)	57.15
		95% Modified-t UCL (Johnson-1978)	56.38
Gamma GOF Test			
A-D Test Statistic	7.837	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.779	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.124	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0463	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.241	k star (bias corrected MLE)	1.234
Theta hat (MLE)	41.37	Theta star (bias corrected MLE)	41.63
nu hat (MLE)	990.6	nu star (bias corrected)	984.5
MLE Mean (bias corrected)	51.35	MLE Sd (bias corrected)	46.23
		Approximate Chi Square Value (0.05)	912.6
Adjusted Level of Significance	0.0494	Adjusted Chi Square Value	912.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	55.39	95% Adjusted Gamma UCL (use when n<50)	55.41
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.97	Shapiro Wilk Lognormal GOF Test	

5% Shapiro Wilk P Value	1.54E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0746	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0444	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-0.0587	Mean of logged Data	3.485
Maximum of Logged Data	6.697	SD of logged Data	0.973
Assuming Lognormal Distribution			
95% H-UCL	58	90% Chebyshev (MVUE) UCL	61.45
95% Chebyshev (MVUE) UCL	65.63	97.5% Chebyshev (MVUE) UCL	71.42
99% Chebyshev (MVUE) UCL	82.8		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	56.23	95% Jackknife UCL	56.24
95% Standard Bootstrap UCL	56.32	95% Bootstrap-t UCL	57.36
95% Hall's Bootstrap UCL	59.09	95% Percentile Bootstrap UCL	56.41
95% BCA Bootstrap UCL	57.29		
90% Chebyshev(Mean, Sd) UCL	60.24	95% Chebyshev(Mean, Sd) UCL	64.27
97.5% Chebyshev(Mean, Sd) UCL	69.85	99% Chebyshev(Mean, Sd) UCL	80.83
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	64.27		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***mephanac (mcpa)***94-74-6***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	161	Number of Distinct Observations	158
Number of Detects	4	Number of Non-Detects	157
Number of Distinct Detects	4	Number of Distinct Non-Detects	154
Minimum Detect	1.028	Minimum Non-Detect	0.847
Maximum Detect	2.65	Maximum Non-Detect	8.997
Variance Detects	0.526	Percent Non-Detects	97.52%
Mean Detects	1.893	SD Detects	0.726
Median Detects	1.948	CV Detects	0.383
Skewness Detects	-0.302	Kurtosis Detects	-2.378
Mean of Logged Detects	0.575	SD of Logged Detects	0.424
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.964	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.214	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.16	Standard Error of Mean	0.156
SD	0.436	95% KM (BCA) UCL	N/A
95% KM (t) UCL	1.418	95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	1.417	95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	1.628	95% KM Chebyshev UCL	1.84
97.5% KM Chebyshev UCL	2.134	99% KM Chebyshev UCL	2.711
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.272	Anderson-Darling GOF Test	
5% A-D Critical Value	0.658	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.255	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.395	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	8.107	k star (bias corrected MLE)	2.193
Theta hat (MLE)	0.234	Theta star (bias corrected MLE)	0.863
nu hat (MLE)	64.86	nu star (bias corrected)	17.55
MLE Mean (bias corrected)	1.893	MLE Sd (bias corrected)	1.278
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	7.07	nu hat (KM)	2277
Approximate Chi Square Value (N/A, α)	2167	Adjusted Chi Square Value (N/A, β)	2166
95% Gamma Approximate KM-UCL (use when n>=50)	1.219	95% Gamma Adjusted KM-UCL (use when n<50)	1.22
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.431 Mean	0.944
Maximum	2.65 Median	0.933
SD	0.195 CV	0.206
k hat (MLE)	38.46 k star (bias corrected MLE)	37.75
Theta hat (MLE)	0.0246 Theta star (bias corrected MLE)	0.025
nu hat (MLE)	12385 nu star (bias corrected)	12155
MLE Mean (bias corrected)	0.944 MLE Sd (bias corrected)	0.154
	Adjusted Level of Significance (β)	0.0485
Approximate Chi Square Value (N/A, α)	11900 Adjusted Chi Square Value (N/A, β)	11898
95% Gamma Approximate UCL (use when n>=50)	0.965 95% Gamma Adjusted UCL (use when n<50)	N/A
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.943 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748 Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.229 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.994 Mean in Log Scale	-0.0162
SD in Original Scale	0.182 SD in Log Scale	0.124
95% t UCL (assumes normality of ROS data)	1.017 95% Percentile Bootstrap UCL	1.02
95% BCA Bootstrap UCL	1.027 95% Bootstrap t UCL	1.054
95% H-UCL (Log ROS)	1.008	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	0.0946 95% H-UCL (KM -Log)	1.203
KM SD (logged)	0.309 95% Critical H Value (KM-Log)	1.723
KM Standard Error of Mean (logged)	0.127	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	1.996 Mean in Log Scale	0.617
SD in Original Scale	0.742 SD in Log Scale	0.402
95% t UCL (Assumes normality)	2.092 95% H-Stat UCL	2.124
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	1.418 95% KM (Percentile Bootstrap) UCL	N/A
Warning: One or more Recommended UCL(s) not available!		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***mephanac (mcpa)***94-74-6***t***ug/kg)		
General Statistics		
Total Number of Observations	161 Number of Distinct Observations	55
Number of Detects	4 Number of Non-Detects	157
Number of Distinct Detects	4 Number of Distinct Non-Detects	51
Minimum Detect	7200 Minimum Non-Detect	12000
Maximum Detect	26047 Maximum Non-Detect	52000
Variance Detects	1.06E+08 Percent Non-Detects	97.52%
Mean Detects	17116 SD Detects	10273
Median Detects	17608 CV Detects	0.6
Skewness Detects	-0.0359 Kurtosis Detects	-5.791
Mean of Logged Detects	9.587 SD of Logged Detects	0.675
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.782 Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.748 Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.304 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.443 Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	8775 Standard Error of Mean	933.5
SD	3178 95% KM (BCA) UCL	N/A
95% KM (t) UCL	10319 95% KM (Percentile Bootstrap) UCL	N/A
95% KM (z) UCL	10310 95% KM Bootstrap t UCL	N/A
90% KM Chebyshev UCL	11575 95% KM Chebyshev UCL	12844
97.5% KM Chebyshev UCL	14604 99% KM Chebyshev UCL	18063

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.569	Anderson-Darling GOF Test
5% A-D Critical Value	0.659	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.338	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.396	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	3.277	k star (bias corrected MLE) 0.986
Theta hat (MLE)	5223	Theta star (bias corrected MLE) 17361
nu hat (MLE)	26.21	nu star (bias corrected) 7.887
MLE Mean (bias corrected)	17116	MLE Sd (bias corrected) 17238
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	7.625	nu hat (KM) 2455
Approximate Chi Square Value (N/A, α)	2341	Adjusted Chi Square Value (N/A, β) 2340
95% Gamma Approximate KM-UCL (use when n>=50)	9203	95% Gamma Adjusted KM-UCL (use when n<50) 9206
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2999	Mean 9195
Maximum	26047	Median 8700
SD	3733	CV 0.406
k hat (MLE)	6.669	k star (bias corrected MLE) 6.548
Theta hat (MLE)	1379	Theta star (bias corrected MLE) 1404
nu hat (MLE)	2147	nu star (bias corrected) 2109
MLE Mean (bias corrected)	9195	MLE Sd (bias corrected) 3593
		Adjusted Level of Significance (β) 0.0485
Approximate Chi Square Value (N/A, α)	2003	Adjusted Chi Square Value (N/A, β) 2002
95% Gamma Approximate UCL (use when n>=50)	9680	95% Gamma Adjusted UCL (use when n<50) N/A
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.815	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.748	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.303	Lilliefors GOF Test
5% Lilliefors Critical Value	0.443	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	9077	Mean in Log Scale 9.057
SD in Original Scale	3320	SD in Log Scale 0.33
95% t UCL (assumes normality of ROS data)	9510	95% Percentile Bootstrap UCL 9504
95% BCA Bootstrap UCL	9557	95% Bootstrap t UCL 9554
95% H-UCL (Log ROS)	9479	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	9.044	95% H-UCL (KM -Log) 8977
KM SD (logged)	0.233	95% Critical H Value (KM-Log) 1.698
KM Standard Error of Mean (logged)	0.105	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	14692	Mean in Log Scale 9.555
SD in Original Scale	4148	SD in Log Scale 0.285
95% t UCL (Assumes normality)	15233	95% H-Stat UCL 15289
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Normal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	10319	95% KM (Percentile Bootstrap) UCL N/A
Warning: One or more Recommended UCL(s) not available!		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***mercury***7439-97-6***t***mg/kg)		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 328
		Number of Missing Observations 0
Minimum	0.0563	Mean 1.806
Maximum	13.38	Median 1.24

SD	1.63	Std. Error of Mean	0.0852
Coefficient of Variation	0.902	Skewness	3.231
Normal GOF Test			
Shapiro Wilk Test Statistic	0.727	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.166	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.946	95% Adjusted-CLT UCL (Chen-1995)	1.962
		95% Modified-t UCL (Johnson-1978)	1.949
Gamma GOF Test			
A-D Test Statistic	3.591	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.768	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0983	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0482	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.824	k star (bias corrected MLE)	1.811
Theta hat (MLE)	0.99	Theta star (bias corrected MLE)	0.998
nu hat (MLE)	1335	nu star (bias corrected)	1325
MLE Mean (bias corrected)	1.806	MLE Sd (bias corrected)	1.342
		Approximate Chi Square Value (0.05)	1242
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1241
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1.928	95% Adjusted Gamma UCL (use when n<50)	1.928
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.974	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.00716	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0622	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.877	Mean of logged Data	0.293
Maximum of Logged Data	2.594	SD of logged Data	0.795
Assuming Lognormal Distribution			
95% H-UCL	1.994	90% Chebyshev (MVUE) UCL	2.097
95% Chebyshev (MVUE) UCL	2.215	97.5% Chebyshev (MVUE) UCL	2.379
99% Chebyshev (MVUE) UCL	2.702		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1.946	95% Jackknife UCL	1.946
95% Standard Bootstrap UCL	1.944	95% Bootstrap-t UCL	1.972
95% Hall's Bootstrap UCL	1.965	95% Percentile Bootstrap UCL	1.95
95% BCA Bootstrap UCL	1.969		
90% Chebyshev(Mean, Sd) UCL	2.062	95% Chebyshev(Mean, Sd) UCL	2.177
97.5% Chebyshev(Mean, Sd) UCL	2.338	99% Chebyshev(Mean, Sd) UCL	2.654
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	2.177		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***mercury***7439-97-6***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
		Number of Missing Observations	0
Minimum	0.00819	Mean	0.249
Maximum	13.12	Median	0.205
SD	0.688	Std. Error of Mean	0.0359
Coefficient of Variation	2.764	Skewness	18.07
Normal GOF Test			
Shapiro Wilk Test Statistic	0.154	Shapiro Wilk GOF Test	

5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level		
Lilliefors Test Statistic	0.363	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.308	95% Adjusted-CLT UCL (Chen-1995)	0.344
		95% Modified-t UCL (Johnson-1978)	0.314
Gamma GOF Test			
A-D Test Statistic	2.73E+28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.771	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.148	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0483	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.627	k star (bias corrected MLE)	1.615
Theta hat (MLE)	0.153	Theta star (bias corrected MLE)	0.154
nu hat (MLE)	1191	nu star (bias corrected)	1183
MLE Mean (bias corrected)	0.249	MLE Sd (bias corrected)	0.196
		Approximate Chi Square Value (0.05)	1104
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1103
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.267	95% Adjusted Gamma UCL (use when n<50)	0.267
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.917	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.135	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-4.805	Mean of logged Data	-1.729
Maximum of Logged Data	2.574	SD of logged Data	0.735
Assuming Lognormal Distribution			
95% H-UCL	0.25	90% Chebyshev (MVUE) UCL	0.262
95% Chebyshev (MVUE) UCL	0.276	97.5% Chebyshev (MVUE) UCL	0.295
99% Chebyshev (MVUE) UCL	0.332		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.308	95% Jackknife UCL	0.308
95% Standard Bootstrap UCL	0.307	95% Bootstrap-t UCL	0.496
95% Hall's Bootstrap UCL	0.548	95% Percentile Bootstrap UCL	0.318
95% BCA Bootstrap UCL	0.362		
90% Chebyshev(Mean, Sd) UCL	0.357	95% Chebyshev(Mean, Sd) UCL	0.405
97.5% Chebyshev(Mean, Sd) UCL	0.473	99% Chebyshev(Mean, Sd) UCL	0.606
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.405		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***methoxychlor***72-43-5***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	347
Number of Detects	138	Number of Non-Detects	228
Number of Distinct Detects	137	Number of Distinct Non-Detects	213
Minimum Detect	2.66E-05	Minimum Non-Detect	1.50E-05
Maximum Detect	0.0229	Maximum Non-Detect	0.0287
Variance Detects	1.01E-05	Percent Non-Detects	62.30%
Mean Detects	0.00237	SD Detects	0.00317
Median Detects	0.00138	CV Detects	1.34
Skewness Detects	3.488	Kurtosis Detects	16.51
Mean of Logged Detects	-6.724	SD of Logged Detects	1.261
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.662	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.23	Lilliefors GOF Test	

5% Lilliefors Critical Value	0.0754	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.87E-04	Standard Error of Mean	1.24E-04
SD	0.0023	95% KM (BCA) UCL	0.00121
95% KM (t) UCL	0.00119	95% KM (Percentile Bootstrap) UCL	0.0012
95% KM (z) UCL	0.00119	95% KM Bootstrap t UCL	0.00123
90% KM Chebyshev UCL	0.00136	95% KM Chebyshev UCL	0.00153
97.5% KM Chebyshev UCL	0.00176	99% KM Chebyshev UCL	0.00222
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	8.50E-01	Anderson-Darling GOF Test	
5% A-D Critical Value	0.79	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0924	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0824	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.867	k star (bias corrected MLE)	0.853
Theta hat (MLE)	0.00273	Theta star (bias corrected MLE)	0.00278
nu hat (MLE)	239.3	nu star (bias corrected)	235.4
MLE Mean (bias corrected)	0.00237	MLE Sd (bias corrected)	0.00256
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.185	nu hat (KM)	135.3
Approximate Chi Square Value (135.33, α)	109.5	Adjusted Chi Square Value (135.33, β)	109.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.00122	95% Gamma Adjusted KM-UCL (use when n<50)	0.00122
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.66E-05	Mean	0.00712
Maximum	0.0229	Median	0.01
SD	0.00418	CV	0.587
k hat (MLE)	1.228	k star (bias corrected MLE)	1.22
Theta hat (MLE)	0.0058	Theta star (bias corrected MLE)	0.00584
nu hat (MLE)	899.1	nu star (bias corrected)	893.1
MLE Mean (bias corrected)	0.00712	MLE Sd (bias corrected)	0.00645
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (893.11, α)	824.7	Adjusted Chi Square Value (893.11, β)	824.5
95% Gamma Approximate UCL (use when n>=50)	0.00771	95% Gamma Adjusted UCL (use when n<50)	0.00771
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0732	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0754	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	9.41E-04	Mean in Log Scale	-8.512
SD in Original Scale	0.00224	SD in Log Scale	1.638
95% t UCL (assumes normality of ROS data)	0.00113	95% Percentile Bootstrap UCL	0.00115
95% BCA Bootstrap UCL	0.00117	95% Bootstrap t UCL	0.00116
95% H-UCL (Log ROS)	9.71E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-9.062	95% H-UCL (KM -Log)	0.00185
KM SD (logged)	2.187	95% Critical H Value (KM-Log)	3.307
KM Standard Error of Mean (logged)	0.143		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00169	Mean in Log Scale	-8.03
SD in Original Scale	0.00317	SD in Log Scale	1.907
95% t UCL (Assumes normality)	0.00197	95% H-Stat UCL	0.00271
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.00121		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***methoxychlor***72-43-5***t***ug/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	286
Number of Detects	138	Number of Non-Detects	228
Number of Distinct Detects	125	Number of Distinct Non-Detects	179
Minimum Detect	0.14	Minimum Non-Detect	0.079
Maximum Detect	336.1	Maximum Non-Detect	250.1
Variance Detects	2.13E+03	Percent Non-Detects	62.30%
Mean Detects	26.29	SD Detects	46.14
Median Detects	12	CV Detects	1.755
Skewness Detects	4.033	Kurtosis Detects	20.44
Mean of Logged Detects	2.285	SD of Logged Detects	1.499
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.558	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.289	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0754	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	10.76	Standard Error of Mean	1.681
SD	31.4	95% KM (BCA) UCL	13.56
95% KM (t) UCL	13.53	95% KM (Percentile Bootstrap) UCL	13.59
95% KM (z) UCL	13.53	95% KM Bootstrap t UCL	14.32
90% KM Chebyshev UCL	15.81	95% KM Chebyshev UCL	18.09
97.5% KM Chebyshev UCL	21.26	99% KM Chebyshev UCL	27.49
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.358	Anderson-Darling GOF Test	
5% A-D Critical Value	0.807	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.124	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0835	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.624	k star (bias corrected MLE)	0.615
Theta hat (MLE)	42.12	Theta star (bias corrected MLE)	42.72
nu hat (MLE)	172.3	nu star (bias corrected)	169.9
MLE Mean (bias corrected)	26.29	MLE Sd (bias corrected)	33.51
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.117	nu hat (KM)	85.99
Approximate Chi Square Value (85.99, α)	65.62	Adjusted Chi Square Value (85.99, β)	65.55
95% Gamma Approximate KM-UCL (use when n>=50)	14.1	95% Gamma Adjusted KM-UCL (use when n<50)	14.12
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	9.943
Maximum	336.1	Median	0.01
SD	31.01	CV	3.119
k hat (MLE)	0.176	k star (bias corrected MLE)	0.176
Theta hat (MLE)	56.57	Theta star (bias corrected MLE)	56.45
nu hat (MLE)	128.7	nu star (bias corrected)	128.9
MLE Mean (bias corrected)	9.943	MLE Sd (bias corrected)	23.69
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (128.94, α)	103.7	Adjusted Chi Square Value (128.94, β)	103.6
95% Gamma Approximate UCL (use when n>=50)	12.36	95% Gamma Adjusted UCL (use when n<50)	12.37
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0844	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0754	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	10.18	Mean in Log Scale	0.138
SD in Original Scale	30.93	SD in Log Scale	1.998
95% t UCL (assumes normality of ROS data)	12.85	95% Percentile Bootstrap UCL	13.11
95% BCA Bootstrap UCL	13.59	95% Bootstrap t UCL	13.74
95% H-UCL (Log ROS)	11.7		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.3	95% H-UCL (KM -Log)	23.15
KM SD (logged)	2.444	95% Critical H Value (KM-Log)	3.566
KM Standard Error of Mean (logged)	0.155		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	

Mean in Original Scale	17.65	Mean in Log Scale	0.899
SD in Original Scale	37.68	SD in Log Scale	2.095
95% t UCL (Assumes normality)	20.9	95% H-Stat UCL	31.38
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	13.56

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***methyl ethyl ketone***78-93-3***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	167
Number of Detects	134	Number of Non-Detects	38
Number of Distinct Detects	133	Number of Distinct Non-Detects	37
Minimum Detect	1.50E-04	Minimum Non-Detect	0.00198
Maximum Detect	0.0564	Maximum Non-Detect	0.766
Variance Detects	7.28E-05	Percent Non-Detects	22.09%
Mean Detects	0.012	SD Detects	0.00853
Median Detects	0.0107	CV Detects	0.71
Skewness Detects	1.445	Kurtosis Detects	4.364
Mean of Logged Detects	-4.712	SD of Logged Detects	0.859

Normal GOF Test on Detects Only		Normal GOF Test on Detected Observations Only	
Shapiro Wilk Test Statistic	0.905	Detected Data Not Normal at 5% Significance Level	
5% Shapiro Wilk P Value	5.75E-12	Lilliefors GOF Test	
Lilliefors Test Statistic	0.0952	Detected Data Not Normal at 5% Significance Level	
5% Lilliefors Critical Value	0.0765		
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0115	Standard Error of Mean	7.22E-04
SD	0.00857	95% KM (BCA) UCL	0.0128
95% KM (t) UCL	0.0126	95% KM (Percentile Bootstrap) UCL	0.0126
95% KM (z) UCL	0.0126	95% KM Bootstrap t UCL	0.0127
90% KM Chebyshev UCL	0.0136	95% KM Chebyshev UCL	0.0146
97.5% KM Chebyshev UCL	0.016	99% KM Chebyshev UCL	0.0186

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.524	Anderson-Darling GOF Test	
5% A-D Critical Value	0.767	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0599	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0819	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.874	k star (bias corrected MLE)	1.837
Theta hat (MLE)	0.00641	Theta star (bias corrected MLE)	0.00654
nu hat (MLE)	502.1	nu star (bias corrected)	492.2
MLE Mean (bias corrected)	0.012	MLE Sd (bias corrected)	0.00886

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.786	nu hat (KM)	614.2
Approximate Chi Square Value (614.25, α)	557.8	Adjusted Chi Square Value (614.25, β)	557.3
95% Gamma Approximate KM-UCL (use when n>=50)	0.0126	95% Gamma Adjusted KM-UCL (use when n<50)	0.0126

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	1.50E-04	Mean	1.16%
Maximum	0.0564	Median	0.01
SD	0.00757	CV	0.653
k hat (MLE)	2.339	k star (bias corrected MLE)	2.302
Theta hat (MLE)	0.00495	Theta star (bias corrected MLE)	0.00503
nu hat (MLE)	804.7	nu star (bias corrected)	792
MLE Mean (bias corrected)	0.0116	MLE Sd (bias corrected)	0.00764
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (791.96, α)	727.7	Adjusted Chi Square Value (791.96, β)	727.1
95% Gamma Approximate UCL (use when n>=50)	0.0126	95% Gamma Adjusted UCL (use when n<50)	0.0126

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0894	Lilliefors GOF Test	

5% Lilliefors Critical Value	0.0765	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0109	Mean in Log Scale -4.789
SD in Original Scale	0.00789	SD in Log Scale 0.813
95% t UCL (assumes normality of ROS data)	0.0119	95% Percentile Bootstrap UCL 0.0119
95% BCA Bootstrap UCL	0.012	95% Bootstrap t UCL 0.012
95% H-UCL (Log ROS)	0.0131	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.0258	Mean in Log Scale -4.415
SD in Original Scale	0.044	SD in Log Scale 1.229
95% t UCL (Assumes normality)	0.0314	95% H-Stat UCL 0.0322
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.0128	95% GROS Approximate Gamma UCL 0.0126
95% Approximate Gamma KM-UCL	0.0126	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***methyl ethyl ketone***78-93-3***t***ug/kg)		
General Statistics		
Total Number of Observations	172	Number of Distinct Observations 94
Number of Detects	134	Number of Non-Detects 38
Number of Distinct Detects	75	Number of Distinct Non-Detects 25
Minimum Detect	1.9	Minimum Non-Detect 22
Maximum Detect	1100	Maximum Non-Detect 7200
Variance Detects	11362	Percent Non-Detects 22.09%
Mean Detects	87.64	SD Detects 106.6
Median Detects	68.5	CV Detects 1.216
Skewness Detects	6.799	Kurtosis Detects 61.62
Mean of Logged Detects	4.131	SD of Logged Detects 0.835
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.528	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.237	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0765	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	83.33	Standard Error of Mean 8.526
SD	102.8	95% KM (BCA) UCL 100.6
95% KM (t) UCL	97.43	95% KM (Percentile Bootstrap) UCL 97.69
95% KM (z) UCL	97.35	95% KM Bootstrap t UCL 106.6
90% KM Chebyshev UCL	108.9	95% KM Chebyshev UCL 120.5
97.5% KM Chebyshev UCL	136.6	99% KM Chebyshev UCL 168.2
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.349	Anderson-Darling GOF Test
5% A-D Critical Value	0.769	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.116	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0821	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.608	k star (bias corrected MLE) 1.577
Theta hat (MLE)	54.5	Theta star (bias corrected MLE) 55.58
nu hat (MLE)	430.9	nu star (bias corrected) 422.6
MLE Mean (bias corrected)	87.64	MLE Sd (bias corrected) 69.79
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.657	nu hat (KM) 226
Approximate Chi Square Value (226.00, α)	192.2	Adjusted Chi Square Value (226.00, β) 191.9
95% Gamma Approximate KM-UCL (use when n>=50)	97.98	95% Gamma Adjusted KM-UCL (use when n<50) 98.11
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		

Minimum	0.01	Mean	79.42
Maximum	1100	Median	60.11
SD	97.08	CV	1.222
k hat (MLE)	0.868	k star (bias corrected MLE)	0.857
Theta hat (MLE)	91.5	Theta star (bias corrected MLE)	92.7
nu hat (MLE)	298.6	nu star (bias corrected)	294.7
MLE Mean (bias corrected)	79.42	MLE Sd (bias corrected)	85.8
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (294.73, α)	256	Adjusted Chi Square Value (294.73, β)	255.7
95% Gamma Approximate UCL (use when n>=50)	91.45	95% Gamma Adjusted UCL (use when n<50)	91.56
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.072	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0765	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	79.86	Mean in Log Scale	4.06
SD in Original Scale	95.98	SD in Log Scale	0.795
95% t UCL (assumes normality of ROS data)	91.96	95% Percentile Bootstrap UCL	93.87
95% BCA Bootstrap UCL	96.79	95% Bootstrap t UCL	99.72
95% H-UCL (Log ROS)	89.89		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.051	95% H-UCL (KM -Log)	97.23
KM SD (logged)	0.88	95% Critical H Value (KM-Log)	2.066
KM Standard Error of Mean (logged)	0.0753		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	248	Mean in Log Scale	4.515
SD in Original Scale	489.1	SD in Log Scale	1.328
95% t UCL (Assumes normality)	309.7	95% H-Stat UCL	283.6
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	100.6		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***methyl mercury***22967-92-6***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	249	Number of Distinct Observations	135
Number of Detects	219	Number of Non-Detects	30
Number of Distinct Detects	119	Number of Distinct Non-Detects	20
Minimum Detect	4.53E-06	Minimum Non-Detect	1.00E-05
Maximum Detect	0.0064	Maximum Non-Detect	2.40E-04
Variance Detects	8.37E-07	Percent Non-Detects	12.05%
Mean Detects	4.48E-04	SD Detects	9.15E-04
Median Detects	1.20E-04	CV Detects	2.041
Skewness Detects	3.879	Kurtosis Detects	16.93
Mean of Logged Detects	-9	SD of Logged Detects	1.666
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.51	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.314	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0599	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.96E-04	Standard Error of Mean	5.51E-05
SD	8.68E-04	95% KM (BCA) UCL	4.94E-04
95% KM (t) UCL	4.87E-04	95% KM (Percentile Bootstrap) UCL	4.86E-04
95% KM (z) UCL	4.87E-04	95% KM Bootstrap t UCL	5.16E-04
90% KM Chebyshev UCL	5.62E-04	95% KM Chebyshev UCL	6.37E-04
97.5% KM Chebyshev UCL	7.41E-04	99% KM Chebyshev UCL	9.45E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.18	Anderson-Darling GOF Test	
5% A-D Critical Value	0.823	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.124	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0651	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.493	k star (bias corrected MLE) 0.49
Theta hat (MLE)	9.09E-04	Theta star (bias corrected MLE) 9.16E-04
nu hat (MLE)	216.1	nu star (bias corrected) 214.4
MLE Mean (bias corrected)	4.48E-04	MLE Sd (bias corrected) 6.41E-04
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.209	nu hat (KM) 103.9
Approximate Chi Square Value (103.88, α)	81.36	Adjusted Chi Square Value (103.88, β) 81.25
95% Gamma Approximate KM-UCL (use when n>=50)	5.06E-04	95% Gamma Adjusted KM-UCL (use when n<50) 5.07E-04
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	4.53E-06	Mean 0.0016
Maximum	1.00E-02	Median 1.70E-04
SD	0.00323	CV 2.021
k hat (MLE)	0.333	k star (bias corrected MLE) 0.332
Theta hat (MLE)	0.0048	Theta star (bias corrected MLE) 0.00481
nu hat (MLE)	166.1	nu star (bias corrected) 165.4
MLE Mean (bias corrected)	0.0016	MLE Sd (bias corrected) 0.00277
		Adjusted Level of Significance (β) 0.049
Approximate Chi Square Value (165.41, α)	136.7	Adjusted Chi Square Value (165.41, β) 136.5
95% Gamma Approximate UCL (use when n>=50)	0.00194	95% Gamma Adjusted UCL (use when n<50) 0.00194
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0603	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0599	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3.96E-04	Mean in Log Scale -9.299
SD in Original Scale	8.70E-04	SD in Log Scale 1.789
95% t UCL (assumes normality of ROS data)	4.87E-04	95% Percentile Bootstrap UCL 4.97E-04
95% BCA Bootstrap UCL	5.01E-04	95% Bootstrap t UCL 5.12E-04
95% H-UCL (Log ROS)	6.33E-04	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	3.97E-04	Mean in Log Scale -9.248
SD in Original Scale	8.69E-04	SD in Log Scale 1.724
95% t UCL (Assumes normality)	4.88E-04	95% H-Stat UCL 5.83E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
97.5% KM (Chebyshev) UCL	7.41E-04	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***methyl mercury***22967-92-6***t***ug/kg)		
General Statistics		
Total Number of Observations	249	Number of Distinct Observations 230
Number of Detects	219	Number of Non-Detects 30
Number of Distinct Detects	202	Number of Distinct Non-Detects 30
Minimum Detect	0.042	Minimum Non-Detect 0.096
Maximum Detect	26	Maximum Non-Detect 2.2
Variance Detects	10.88	Percent Non-Detects 12.05%
Mean Detects	2.073	SD Detects 3.299
Median Detects	0.944	CV Detects 1.591
Skewness Detects	3.848	Kurtosis Detects 18.8
Mean of Logged Detects	-0.104	SD of Logged Detects 1.35
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.591	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.269	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0599	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1.846	Standard Error of Mean 0.2

SD	3.148	95% KM (BCA) UCL	2.218
95% KM (t) UCL	2.176	95% KM (Percentile Bootstrap) UCL	2.171
95% KM (z) UCL	2.175	95% KM Bootstrap t UCL	2.265
90% KM Chebyshev UCL	2.446	95% KM Chebyshev UCL	2.718
97.5% KM Chebyshev UCL	3.095	99% KM Chebyshev UCL	3.836

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.758	Anderson-Darling GOF Test	
5% A-D Critical Value	0.799	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0784	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.064	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.723	k star (bias corrected MLE)	0.716
Theta hat (MLE)	2.869	Theta star (bias corrected MLE)	2.896
nu hat (MLE)	316.5	nu star (bias corrected)	313.5
MLE Mean (bias corrected)	2.073	MLE Sd (bias corrected)	2.45

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.344	nu hat (KM)	171.3
Approximate Chi Square Value (171.29, α)	142	Adjusted Chi Square Value (171.29, β)	141.9
95% Gamma Approximate KM-UCL (use when n \geq 50)	2.226	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	2.229

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1.825
Maximum	26	Median	0.806
SD	3.165	CV	1.734
k hat (MLE)	0.512	k star (bias corrected MLE)	0.508
Theta hat (MLE)	3.568	Theta star (bias corrected MLE)	3.592
nu hat (MLE)	254.8	nu star (bias corrected)	253
MLE Mean (bias corrected)	1.825	MLE Sd (bias corrected)	2.56
		Adjusted Level of Significance (β)	0.049
Approximate Chi Square Value (253.02, α)	217.2	Adjusted Chi Square Value (253.02, β)	217
95% Gamma Approximate UCL (use when n \geq 50)	2.126	95% Gamma Adjusted UCL (use when n $<$ 50)	2.128

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0436	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0599	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.846	Mean in Log Scale	-0.301
SD in Original Scale	3.153	SD in Log Scale	1.381
95% t UCL (assumes normality of ROS data)	2.176	95% Percentile Bootstrap UCL	2.166
95% BCA Bootstrap UCL	2.228	95% Bootstrap t UCL	2.237
95% H-UCL (Log ROS)	2.394		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.325	95% H-UCL (KM -Log)	2.483
KM SD (logged)	1.418	95% Critical H Value (KM-Log)	2.548
KM Standard Error of Mean (logged)	0.0912		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1.851	Mean in Log Scale	-0.298
SD in Original Scale	3.152	SD in Log Scale	1.39
95% t UCL (Assumes normality)	2.18	95% H-Stat UCL	2.434
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (Chebyshev) UCL	2.718		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***methyl tert-butyl ether (mtbe)***1634-04-4***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	161
Number of Detects	7	Number of Non-Detects	165
Number of Distinct Detects	7	Number of Distinct Non-Detects	154

Minimum Detect	1.30E-04	Minimum Non-Detect	3.20E-04
Maximum Detect	0.00491	Maximum Non-Detect	0.156
Variance Detects	3.47E-06	Percent Non-Detects	95.93%
Mean Detects	0.00185	SD Detects	0.00186
Median Detects	0.00146	CV Detects	1.007
Skewness Detects	0.885	Kurtosis Detects	-0.679
Mean of Logged Detects	-6.938	SD of Logged Detects	1.385
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.873	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.204	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level	
Detected Data appear Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	3.08E-04	Standard Error of Mean	7.13E-05
SD	5.36E-04	95% KM (BCA) UCL	5.10E-04
95% KM (t) UCL	4.26E-04	95% KM (Percentile Bootstrap) UCL	4.97E-04
95% KM (z) UCL	4.26E-04	95% KM Bootstrap t UCL	4.70E-04
90% KM Chebyshev UCL	5.22E-04	95% KM Chebyshev UCL	6.19E-04
97.5% KM Chebyshev UCL	7.53E-04	99% KM Chebyshev UCL	0.00102
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.258	Anderson-Darling GOF Test	
5% A-D Critical Value	0.731	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.179	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.321	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.905	k star (bias corrected MLE)	0.612
Theta hat (MLE)	0.00204	Theta star (bias corrected MLE)	0.00302
nu hat (MLE)	12.67	nu star (bias corrected)	8.573
MLE Mean (bias corrected)	0.00185	MLE Sd (bias corrected)	0.00236
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.331	nu hat (KM)	113.8
Approximate Chi Square Value (113.77, α)	90.14	Adjusted Chi Square Value (113.77, β)	89.97
95% Gamma Approximate KM-UCL (use when n>=50)	3.89E-04	95% Gamma Adjusted KM-UCL (use when n<50)	3.90E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.30E-04	Mean	0.00967
Maximum	0.01	Median	0.01
SD	0.00165	CV	0.171
k hat (MLE)	8.331	k star (bias corrected MLE)	8.19
Theta hat (MLE)	0.00116	Theta star (bias corrected MLE)	0.00118
nu hat (MLE)	2866	nu star (bias corrected)	2817
MLE Mean (bias corrected)	0.00967	MLE Sd (bias corrected)	0.00338
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (N/A, α)	2695	Adjusted Chi Square Value (N/A, β)	2694
95% Gamma Approximate UCL (use when n>=50)	0.0101	95% Gamma Adjusted UCL (use when n<50)	0.0101
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.937	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.188	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.61E-04	Mean in Log Scale	-8.5
SD in Original Scale	4.80E-04	SD in Log Scale	0.448
95% t UCL (assumes normality of ROS data)	3.21E-04	95% Percentile Bootstrap UCL	3.31E-04
95% BCA Bootstrap UCL	3.60E-04	95% Bootstrap t UCL	4.46E-04
95% H-UCL (Log ROS)	2.39E-04		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-8.421	95% H-UCL (KM -Log)	2.93E-04
KM SD (logged)	0.625	95% Critical H Value (KM-Log)	1.884
KM Standard Error of Mean (logged)	0.247		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0092	Mean in Log Scale	-6.743
SD in Original Scale	0.0203	SD in Log Scale	1.764
95% t UCL (Assumes normality)	0.0118	95% H-Stat UCL	0.0083

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	4.26E-04 95% KM (Percentile Bootstrap) UCL	4.97E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***methyl tert-butyl ether (mtbe)***1634-04-4***t***ug/kg)

General Statistics		
Total Number of Observations	172	Number of Distinct Observations 79
Number of Detects	7	Number of Non-Detects 165
Number of Distinct Detects	7	Number of Distinct Non-Detects 73
Minimum Detect	1.2	Minimum Non-Detect 3
Maximum Detect	65	Maximum Non-Detect 1700
Variance Detects	552.6	Percent Non-Detects 95.93%
Mean Detects	22.21	SD Detects 23.51
Median Detects	23	CV Detects 1.058
Skewness Detects	0.969	Kurtosis Detects 0.609
Mean of Logged Detects	2.196	SD of Logged Detects 1.722

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.866	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.236	Lilliefors GOF Test
5% Lilliefors Critical Value	0.335	Detected Data appear Normal at 5% Significance Level
Detected Data appear Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2.533	Standard Error of Mean 0.621
SD	6.628	95% KM (BCA) UCL 4.009
95% KM (t) UCL	3.561	95% KM (Percentile Bootstrap) UCL 3.81
95% KM (z) UCL	3.555	95% KM Bootstrap t UCL 4.134
90% KM Chebyshev UCL	4.397	95% KM Chebyshev UCL 5.241
97.5% KM Chebyshev UCL	6.413	99% KM Chebyshev UCL 8.715

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.576	Anderson-Darling GOF Test
5% A-D Critical Value	0.741	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.275	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.324	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.672	k star (bias corrected MLE) 0.479
Theta hat (MLE)	33.06	Theta star (bias corrected MLE) 46.36
nu hat (MLE)	9.407	nu star (bias corrected) 6.709
MLE Mean (bias corrected)	22.21	MLE Sd (bias corrected) 32.09

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.146	nu hat (KM) 50.26
Approximate Chi Square Value (50.26, α)	34.98	Adjusted Chi Square Value (50.26, β) 34.87
95% Gamma Approximate KM-UCL (use when n>=50)	3.64	95% Gamma Adjusted KM-UCL (use when n<50) 3.651

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 2.321
Maximum	65	Median 0.01
SD	6.572	CV 2.832
k hat (MLE)	0.222	k star (bias corrected MLE) 0.222
Theta hat (MLE)	10.48	Theta star (bias corrected MLE) 10.48
nu hat (MLE)	76.2	nu star (bias corrected) 76.2
MLE Mean (bias corrected)	2.321	MLE Sd (bias corrected) 4.93
		Adjusted Level of Significance (β) 0.0486
Approximate Chi Square Value (76.20, α)	57.09	Adjusted Chi Square Value (76.20, β) 56.95
95% Gamma Approximate UCL (use when n>=50)	3.097	95% Gamma Adjusted UCL (use when n<50) 3.105

Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.824	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.803	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.279	Lilliefors GOF Test
5% Lilliefors Critical Value	0.335	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	2.901	Mean in Log Scale	0.582
SD in Original Scale	6.106	SD in Log Scale	0.808
95% t UCL (assumes normality of ROS data)	3.671	95% Percentile Bootstrap UCL	3.814
95% BCA Bootstrap UCL	4.212	95% Bootstrap t UCL	4.515
95% H-UCL (Log ROS)	2.809		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	0.482	95% H-UCL (KM -Log)	2.042
KM SD (logged)	0.554	95% Critical H Value (KM-Log)	1.842
KM Standard Error of Mean (logged)	0.111		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	94.64	Mean in Log Scale	2.187
SD in Original Scale	207	SD in Log Scale	1.93
95% t UCL (Assumes normality)	120.7	95% H-Stat UCL	90.87
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use			
95% KM (t) UCL	3.561	95% KM (Percentile Bootstrap) UCL	3.81

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***methylcyclohexane***108-87-2***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	169
Number of Detects	20	Number of Non-Detects	152
Number of Distinct Detects	20	Number of Distinct Non-Detects	149
Minimum Detect	4.00E-05	Minimum Non-Detect	8.50E-04
Maximum Detect	0.245	Maximum Non-Detect	0.309
Variance Detects	0.00367	Percent Non-Detects	88.37%
Mean Detects	0.0356	SD Detects	0.0606
Median Detects	0.00458	CV Detects	1.7
Skewness Detects	2.472	Kurtosis Detects	7.032
Mean of Logged Detects	-5.413	SD of Logged Detects	2.659

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.646	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.905	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.278	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.198	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00477	Standard Error of Mean	0.0019
SD	0.0236	95% KM (BCA) UCL	0.00841
95% KM (t) UCL	0.00791	95% KM (Percentile Bootstrap) UCL	0.00796
95% KM (z) UCL	0.00789	95% KM Bootstrap t UCL	0.0104
90% KM Chebyshev UCL	0.0105	95% KM Chebyshev UCL	0.013
97.5% KM Chebyshev UCL	0.0166	99% KM Chebyshev UCL	0.0236

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.476	Anderson-Darling GOF Test	
5% A-D Critical Value	0.839	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.141	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.209	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.327	k star (bias corrected MLE)	0.311
Theta hat (MLE)	0.109	Theta star (bias corrected MLE)	0.114
nu hat (MLE)	13.09	nu star (bias corrected)	12.46
MLE Mean (bias corrected)	0.0356	MLE Sd (bias corrected)	0.0639

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0409	nu hat (KM)	14.05
Approximate Chi Square Value (14.05, α)	6.608	Adjusted Chi Square Value (14.05, β)	6.564
95% Gamma Approximate KM-UCL (use when n>=50)	0.0101	95% Gamma Adjusted KM-UCL (use when n<50)	0.0102
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	4.00E-05	Mean 0.013
Maximum	0.245	Median 0.01
SD	0.0218	CV 1.68
k hat (MLE)	1.555	k star (bias corrected MLE) 1.532
Theta hat (MLE)	0.00835	Theta star (bias corrected MLE) 0.00847
nu hat (MLE)	535	nu star (bias corrected) 527
MLE Mean (bias corrected)	0.013	MLE Sd (bias corrected) 0.0105
		Adjusted Level of Significance (β) 0.0486
Approximate Chi Square Value (526.96, α)	474.7	Adjusted Chi Square Value (526.96, β) 474.3
95% Gamma Approximate UCL (use when n>=50)	0.0144	95% Gamma Adjusted UCL (use when n<50) 0.0144
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.946	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.905	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.125	Lilliefors GOF Test
5% Lilliefors Critical Value	0.198	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00436	Mean in Log Scale -7.976
SD in Original Scale	0.0232	SD in Log Scale 1.301
95% t UCL (assumes normality of ROS data)	0.00729	95% Percentile Bootstrap UCL 0.00743
95% BCA Bootstrap UCL	0.00912	95% Bootstrap t UCL 0.0103
95% H-UCL (Log ROS)	0.00102	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-8.062	95% H-UCL (KM -Log) 0.00174
KM SD (logged)	1.646	95% Critical H Value (KM-Log) 2.801
KM Standard Error of Mean (logged)	0.353	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	0.0131	Mean in Log Scale -6.189
SD in Original Scale	0.0315	SD in Log Scale 1.669
95% t UCL (Assumes normality)	0.0171	95% H-Stat UCL 0.0118
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.00791	95% GROS Approximate Gamma UCL 0.0144
95% Approximate Gamma KM-UCL	0.0101	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***methylcyclohexane***108-87-2***t***ug/kg)		
General Statistics		
Total Number of Observations	172	Number of Distinct Observations 57
Number of Detects	20	Number of Non-Detects 152
Number of Distinct Detects	20	Number of Distinct Non-Detects 39
Minimum Detect	0.48	Minimum Non-Detect 6.7
Maximum Detect	2586	Maximum Non-Detect 2900
Variance Detects	453043	Percent Non-Detects 88.37%
Mean Detects	395.1	SD Detects 673.1
Median Detects	46	CV Detects 1.703
Skewness Detects	2.242	Kurtosis Detects 5.267
Mean of Logged Detects	3.866	SD of Logged Detects 2.637
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.656	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.905	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	3.03E-01	Lilliefors GOF Test
5% Lilliefors Critical Value	0.198	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	51.86	Standard Error of Mean 20.84
SD	261	95% KM (BCA) UCL 90.89
95% KM (t) UCL	86.32	95% KM (Percentile Bootstrap) UCL 87.96
95% KM (z) UCL	86.14	95% KM Bootstrap t UCL 118.9
90% KM Chebyshev UCL	114.4	95% KM Chebyshev UCL 142.7
97.5% KM Chebyshev UCL	182	99% KM Chebyshev UCL 259.2

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	0.517	Anderson-Darling GOF Test
5% A-D Critical Value	0.84	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.15	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.21	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.322	k star (bias corrected MLE) 0.307
Theta hat (MLE)	1225	Theta star (bias corrected MLE) 1285
nu hat (MLE)	12.9	nu star (bias corrected) 12.3
MLE Mean (bias corrected)	395.1	MLE Sd (bias corrected) 712.7
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0395	nu hat (KM) 13.58
Approximate Chi Square Value (13.58, α)	6.286	Adjusted Chi Square Value (13.58, β) 6.244
95% Gamma Approximate KM-UCL (use when n \geq 50)	112.1	95% Gamma Adjusted KM-UCL (use when n<50) 112.8
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 48.81
Maximum	2586	Median 0.01
SD	257.9	CV 5.284
k hat (MLE)	0.112	k star (bias corrected MLE) 0.114
Theta hat (MLE)	436.7	Theta star (bias corrected MLE) 429.3
nu hat (MLE)	38.45	nu star (bias corrected) 39.11
MLE Mean (bias corrected)	48.81	MLE Sd (bias corrected) 144.8
		Adjusted Level of Significance (β) 0.0486
Approximate Chi Square Value (39.11, α)	25.78	Adjusted Chi Square Value (39.11, β) 25.69
95% Gamma Approximate UCL (use when n \geq 50)	74.04	95% Gamma Adjusted UCL (use when n<50) 74.3
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.951	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.905	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.112	Lilliefors GOF Test
5% Lilliefors Critical Value	0.198	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	51.25	Mean in Log Scale 1.215
SD in Original Scale	257	SD in Log Scale 1.918
95% t UCL (assumes normality of ROS data)	83.66	95% Percentile Bootstrap UCL 87.29
95% BCA Bootstrap UCL	102.4	95% Bootstrap t UCL 120.4
95% H-UCL (Log ROS)	33.43	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	1.215	95% H-UCL (KM -Log) 16.72
KM SD (logged)	1.592	95% Critical H Value (KM-Log) 2.742
KM Standard Error of Mean (logged)	0.324	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	138.5	Mean in Log Scale 2.74
SD in Original Scale	341.1	SD in Log Scale 1.81
95% t UCL (Assumes normality)	181.5	95% H-Stat UCL 120.5
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	86.32	95% GROS Approximate Gamma UCL 74.04
95% Approximate Gamma KM-UCL	112.1	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***mirex***2385-85-5***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	365	Number of Distinct Observations 340
Number of Detects	205	Number of Non-Detects 160
Number of Distinct Detects	194	Number of Distinct Non-Detects 152
Minimum Detect	1.00E-05	Minimum Non-Detect 1.04E-05

Maximum Detect	0.00318	Maximum Non-Detect	0.0142
Variance Detects	5.94E-08	Percent Non-Detects	43.84%
Mean Detects	1.36E-04	SD Detects	2.44E-04
Median Detects	9.20E-05	CV Detects	179.30%
Skewness Detects	10.04	Kurtosis Detects	121.6
Mean of Logged Detects	-9.305	SD of Logged Detects	0.811
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.357	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.303	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0619	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	9.41E-05	Standard Error of Mean	1.09E-05
SD	1.98E-04	95% KM (BCA) UCL	1.16E-04
95% KM (t) UCL	1.12E-04	95% KM (Percentile Bootstrap) UCL	1.15E-04
95% KM (z) UCL	1.12E-04	95% KM Bootstrap t UCL	1.29E-04
90% KM Chebyshev UCL	1.27E-04	95% KM Chebyshev UCL	1.42E-04
97.5% KM Chebyshev UCL	1.62E-04	99% KM Chebyshev UCL	2.03E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.217	Anderson-Darling GOF Test	
5% A-D Critical Value	0.774	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.149	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0644	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.388	k star (bias corrected MLE)	1.371
Theta hat (MLE)	9.79E-05	Theta star (bias corrected MLE)	9.91E-05
nu hat (MLE)	569.3	nu star (bias corrected)	562.3
MLE Mean (bias corrected)	1.36E-04	MLE Sd (bias corrected)	1.16E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.226	nu hat (KM)	164.8
Approximate Chi Square Value (164.81, α)	136.1	Adjusted Chi Square Value (164.81, β)	136
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1.14E-04	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1.14E-04
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.00E-05	Mean	0.00446
Maximum	0.01	Median	2.25E-04
SD	0.0049	CV	1.1
k hat (MLE)	0.365	k star (bias corrected MLE)	0.363
Theta hat (MLE)	0.0122	Theta star (bias corrected MLE)	0.0123
nu hat (MLE)	266.2	nu star (bias corrected)	265.3
MLE Mean (bias corrected)	0.00446	MLE Sd (bias corrected)	0.0074
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (265.31, α)	228.6	Adjusted Chi Square Value (265.31, β)	228.5
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00518	95% Gamma Adjusted UCL (use when $n < 50$)	0.00518
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0719	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0619	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	9.03E-05	Mean in Log Scale	-9.801
SD in Original Scale	1.90E-04	SD in Log Scale	0.871
95% t UCL (assumes normality of ROS data)	1.07E-04	95% Percentile Bootstrap UCL	1.08E-04
95% BCA Bootstrap UCL	1.18E-04	95% Bootstrap t UCL	1.22E-04
95% H-UCL (Log ROS)	8.88E-05		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-9.855	95% H-UCL (KM -Log)	9.94E-05
KM SD (logged)	1.023	95% Critical H Value (KM-Log)	2.145
KM Standard Error of Mean (logged)	0.0639		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.72E-04	Mean in Log Scale	-9.407
SD in Original Scale	0.00128	SD in Log Scale	1.517
95% t UCL (Assumes normality)	5.82E-04	95% H-Stat UCL	3.19E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use		
95% KM (t) UCL	1.12E-04 95% KM (% Bootstrap) UCL	1.15E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***mirex***2385-85-5***t***ug/kg)

General Statistics		
Total Number of Observations	365	Number of Distinct Observations 257
Number of Detects	205	Number of Non-Detects 160
Number of Distinct Detects	168	Number of Distinct Non-Detects 118
Minimum Detect	0.064	Minimum Non-Detect 0.0719
Maximum Detect	21.3	Maximum Non-Detect 123.4
Variance Detects	3.407	Percent Non-Detects 43.84%
Mean Detects	1.201	SD Detects 1.846
Median Detects	0.89	CV Detects 153.70%
Skewness Detects	7.553	Kurtosis Detects 74.55
Mean of Logged Detects	-0.306	SD of Logged Detects 0.978
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.475	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.269	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0619	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.803	Standard Error of Mean 0.0842
SD	1.532	95% KM (BCA) UCL 0.962
95% KM (t) UCL	0.942	95% KM (Percentile Bootstrap) UCL 0.958
95% KM (z) UCL	0.942	95% KM Bootstrap t UCL 1.023
90% KM Chebyshev UCL	1.056	95% KM Chebyshev UCL 1.171
97.5% KM Chebyshev UCL	1.329	99% KM Chebyshev UCL 1.641
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.021	Anderson-Darling GOF Test
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0756	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0647	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.161	k star (bias corrected MLE) 1.147
Theta hat (MLE)	1.034	Theta star (bias corrected MLE) 1.047
nu hat (MLE)	476	nu star (bias corrected) 470.4
MLE Mean (bias corrected)	1.201	MLE Sd (bias corrected) 1.121
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.275	nu hat (KM) 200.9
Approximate Chi Square Value (200.88, α)	169.1	Adjusted Chi Square Value (200.88, β) 169
95% Gamma Approximate KM-UCL (use when n>=50)	0.954	95% Gamma Adjusted KM-UCL (use when n<50) 0.955
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 0.696
Maximum	21.3	Median 0.24
SD	1.498	CV 2.152
k hat (MLE)	0.414	k star (bias corrected MLE) 0.412
Theta hat (MLE)	1.681	Theta star (bias corrected MLE) 1.687
nu hat (MLE)	302.2	nu star (bias corrected) 301
MLE Mean (bias corrected)	0.696	MLE Sd (bias corrected) 1.084
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (301.01, α)	261.8	Adjusted Chi Square Value (301.01, β) 261.7
95% Gamma Approximate UCL (use when n>=50)	0.8	95% Gamma Adjusted UCL (use when n<50) 0.8
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0796	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0619	Detected Data Not Lognormal at 5% Significance Level
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.764	Mean in Log Scale -0.942
SD in Original Scale	1.47	SD in Log Scale 1.098

95% t UCL (assumes normality of ROS data)	0.891	95% Percentile Bootstrap UCL	0.902
95% BCA Bootstrap UCL	0.938	95% Bootstrap t UCL	0.976
95% H-UCL (Log ROS)	0.809		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.978	95% H-UCL (KM -Log)	0.913
KM SD (logged)	1.216	95% Critical H Value (KM-Log)	2.312
KM Standard Error of Mean (logged)	0.0728		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.631	Mean in Log Scale	-0.479
SD in Original Scale	12.74	SD in Log Scale	1.707
95% t UCL (Assumes normality)	5.731	95% H-Stat UCL	3.416
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	0.942	95% KM (% Bootstrap) UCL	0.958
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***naphthalene***91-20-3***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
Number of Detects	358	Number of Non-Detects	8
Number of Distinct Detects	357	Number of Distinct Non-Detects	8
Minimum Detect	0.00733	Minimum Non-Detect	0.583
Maximum Detect	31.84	Maximum Non-Detect	0.823
Variance Detects	4.392	Percent Non-Detects	2.19%
Mean Detects	0.416	SD Detects	2.096
Median Detects	0.109	CV Detects	5.042
Skewness Detects	12.14	Kurtosis Detects	164.3
Mean of Logged Detects	-2.087	SD of Logged Detects	115.80%
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.173	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.423	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.41	Standard Error of Mean	0.108
SD	2.07	95% KM (BCA) UCL	0.613
95% KM (t) UCL	0.589	95% KM (Percentile Bootstrap) UCL	0.61
95% KM (z) UCL	0.588	95% KM Bootstrap t UCL	0.899
90% KM Chebyshev UCL	0.735	95% KM Chebyshev UCL	0.882
97.5% KM Chebyshev UCL	1.087	99% KM Chebyshev UCL	1.488
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.79E+28	Anderson-Darling GOF Test	
5% A-D Critical Value	0.82	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.224	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0508	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.522	k star (bias corrected MLE)	0.519
Theta hat (MLE)	0.797	Theta star (bias corrected MLE)	0.801
nu hat (MLE)	373.5	nu star (bias corrected)	371.7
MLE Mean (bias corrected)	0.416	MLE Sd (bias corrected)	0.577
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0392	nu hat (KM)	28.71
Approximate Chi Square Value (28.71, α)	17.48	Adjusted Chi Square Value (28.71, β)	17.45
95% Gamma Approximate KM-UCL (use when n>=50)	0.673	95% Gamma Adjusted KM-UCL (use when n<50)	0.675
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00733	Mean	0.407

Maximum	31.84	Median	0.106
SD	2.074	CV	5.097
k hat (MLE)	0.51	k star (bias corrected MLE)	0.507
Theta hat (MLE)	0.798	Theta star (bias corrected MLE)	0.802
nu hat (MLE)	373	nu star (bias corrected)	371.2
MLE Mean (bias corrected)	0.407	MLE Sd (bias corrected)	0.571
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (371.24, α)	327.6	Adjusted Chi Square Value (371.24, β)	327.4
95% Gamma Approximate UCL (use when n>=50)	0.461	95% Gamma Adjusted UCL (use when n<50)	0.461

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.0819 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.409	Mean in Log Scale	-2.089
SD in Original Scale	2.073	SD in Log Scale	1.145
95% t UCL (assumes normality of ROS data)	0.588	95% Percentile Bootstrap UCL	0.601
95% BCA Bootstrap UCL	0.691	95% Bootstrap t UCL	0.901
95% H-UCL (Log ROS)	0.273		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.415	Mean in Log Scale	-2.064
SD in Original Scale	2.073	SD in Log Scale	1.156
95% t UCL (Assumes normality)	0.593	95% H-Stat UCL	0.284
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics	
Data do not follow a Discernible Distribution at 5% Significance Level	

Suggested UCL to Use	
95% KM (Chebyshev) UCL	0.882

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***naphthalene***91-20-3***t***ug/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	313
Number of Detects	358	Number of Non-Detects	8
Number of Distinct Detects	306	Number of Distinct Non-Detects	7
Minimum Detect	44.1	Minimum Non-Detect	6600
Maximum Detect	433958	Maximum Non-Detect	8000
Variance Detects	8.97E+08	Percent Non-Detects	2.19%
Mean Detects	4995	SD Detects	29942
Median Detects	655.5	CV Detects	5.995
Skewness Detects	11.61	Kurtosis Detects	148
Mean of Logged Detects	6.838	SD of Logged Detects	1.311

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.158 Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.434 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	4913	Standard Error of Mean	1548
SD	29577	95% KM (BCA) UCL	7820
95% KM (t) UCL	7466	95% KM (Percentile Bootstrap) UCL	7783
95% KM (z) UCL	7460	95% KM Bootstrap t UCL	11355
90% KM Chebyshev UCL	9558	95% KM Chebyshev UCL	11662
97.5% KM Chebyshev UCL	14582	99% KM Chebyshev UCL	20318

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	48.27	Anderson-Darling GOF Test	
5% A-D Critical Value	0.848	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.255	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0516	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.393	k star (bias corrected MLE)	0.392
Theta hat (MLE)	12705	Theta star (bias corrected MLE)	12752
nu hat (MLE)	281.5	nu star (bias corrected)	280.4
MLE Mean (bias corrected)	4995	MLE Sd (bias corrected)	7981

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0276	nu hat (KM) 20.2
Approximate Chi Square Value (20.20, α)	11	Adjusted Chi Square Value (20.20, β) 10.97
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	9024	95% Gamma Adjusted KM-UCL (use when $n < 50$) 9046
Gamma (KM) may not be used when k hat (KM) is < 0.1		

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 4889
Maximum	433958	Median 649.5
SD	29620	CV 6.058
k hat (MLE)	0.357	k star (bias corrected MLE) 0.356
Theta hat (MLE)	13680	Theta star (bias corrected MLE) 13723
nu hat (MLE)	261.6	nu star (bias corrected) 260.8
MLE Mean (bias corrected)	4889	MLE Sd (bias corrected) 8191
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (260.80, α)	224.4	Adjusted Chi Square Value (260.80, β) 224.3
95% Gamma Approximate UCL (use when $n \geq 50$)	5682	95% Gamma Adjusted UCL (use when $n < 50$) 5685

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.137	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	4905	Mean in Log Scale 6.835
SD in Original Scale	29618	SD in Log Scale 1.297
95% t UCL (assumes normality of ROS data)	7457	95% Percentile Bootstrap UCL 7532
95% BCA Bootstrap UCL	9011	95% Bootstrap t UCL 11990
95% H-UCL (Log ROS)	2536	

DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	4964	Mean in Log Scale 6.867
SD in Original Scale	29612	SD in Log Scale 1.311
95% t UCL (Assumes normality)	7517	95% H-Stat UCL 2674
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		

Suggested UCL to Use		
95% KM (Chebyshev) UCL	11662	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***naphthobenzothiophene***nbt***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	170	Number of Distinct Observations 170
		Number of Missing Observations 0
Minimum	0.017	Mean 0.147
Maximum	1.143	Median 0.122
SD	0.12	Std. Error of Mean 0.00923
Coefficient of Variation	0.817	Skewness 4.465

Normal GOF Test		
Shapiro Wilk Test Statistic	0.657	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.204	Lilliefors GOF Test
5% Lilliefors Critical Value	0.068	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	0.163	95% Adjusted-CLT UCL (Chen-1995) 0.166
		95% Modified-t UCL (Johnson-1978) 0.163

Gamma GOF Test		
A-D Test Statistic	3.242	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.761	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.126	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0719	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics		
k hat (MLE)	2.837 k star (bias corrected MLE)	2.791
Theta hat (MLE)	0.052 Theta star (bias corrected MLE)	0.0528
nu hat (MLE)	964.5 nu star (bias corrected)	948.8
MLE Mean (bias corrected)	0.147 MLE Sd (bias corrected)	0.0882
	Approximate Chi Square Value (0.05)	878.3
Adjusted Level of Significance	0.0486 Adjusted Chi Square Value	877.7

Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	0.159 95% Adjusted Gamma UCL (use when n<50)	0.159

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.985 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.675 Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0785 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.068 Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level		

Lognormal Statistics		
Minimum of Logged Data	-4.077 Mean of logged Data	-2.101
Maximum of Logged Data	0.134 SD of logged Data	0.576

Assuming Lognormal Distribution		
95% H-UCL	0.157 90% Chebyshev (MVUE) UCL	0.165
95% Chebyshev (MVUE) UCL	0.174 97.5% Chebyshev (MVUE) UCL	0.187
99% Chebyshev (MVUE) UCL	0.212	

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs		
95% CLT UCL	0.163 95% Jackknife UCL	0.163
95% Standard Bootstrap UCL	0.163 95% Bootstrap-t UCL	0.168
95% Hall's Bootstrap UCL	0.172 95% Percentile Bootstrap UCL	0.163
95% BCA Bootstrap UCL	0.166	
90% Chebyshev(Mean, Sd) UCL	0.175 95% Chebyshev(Mean, Sd) UCL	0.188
97.5% Chebyshev(Mean, Sd) UCL	0.205 99% Chebyshev(Mean, Sd) UCL	0.239

Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	0.188	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***naphthobenzothiophene***nbt***t***ug/kg)

General Statistics		
Total Number of Observations	170 Number of Distinct Observations	147
	Number of Missing Observations	0
Minimum	44.7 Mean	1310
Maximum	12800 Median	1030
SD	1356 Std. Error of Mean	104
Coefficient of Variation	1.035 Skewness	4.447

Normal GOF Test		
Shapiro Wilk Test Statistic	0.676 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.195 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.068 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1482 95% Adjusted-CLT UCL (Chen-1995)	1519
	95% Modified-t UCL (Johnson-1978)	1488

Gamma GOF Test		
A-D Test Statistic	1.047 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.77 Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0809 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0727 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics		
k hat (MLE)	1.561 k star (bias corrected MLE)	1.537
Theta hat (MLE)	839.5 Theta star (bias corrected MLE)	852.4

nu hat (MLE)	530.7	nu star (bias corrected)	522.6
MLE Mean (bias corrected)	1310	MLE Sd (bias corrected)	1057
		Approximate Chi Square Value (0.05)	470.6
Adjusted Level of Significance	0.0486	Adjusted Chi Square Value	470.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1455	95% Adjusted Gamma UCL (use when n<50)	1456
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.985	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.716	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0688	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.068	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.8	Mean of logged Data	6.825
Maximum of Logged Data	9.457	SD of logged Data	0.868
Assuming Lognormal Distribution			
95% H-UCL	1539	90% Chebyshev (MVUE) UCL	1648
95% Chebyshev (MVUE) UCL	1789	97.5% Chebyshev (MVUE) UCL	1984
99% Chebyshev (MVUE) UCL	2368		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1481	95% Jackknife UCL	1482
95% Standard Bootstrap UCL	1484	95% Bootstrap-t UCL	1539
95% Hall's Bootstrap UCL	1594	95% Percentile Bootstrap UCL	1499
95% BCA Bootstrap UCL	1532		
90% Chebyshev(Mean, Sd) UCL	1622	95% Chebyshev(Mean, Sd) UCL	1764
97.5% Chebyshev(Mean, Sd) UCL	1960	99% Chebyshev(Mean, Sd) UCL	2345
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1764		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***nickel***7440-02-0***t***mg/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	311
		Number of Missing Observations	0
Minimum	3.14	Mean	183.4
Maximum	4210	Median	57.95
SD	370.1	Std. Error of Mean	19.35
Coefficient of Variation	2.018	Skewness	6.19
Normal GOF Test			
Shapiro Wilk Test Statistic	0.46	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.313	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	215.3	95% Adjusted-CLT UCL (Chen-1995)	221.9
		95% Modified-t UCL (Johnson-1978)	216.3
Gamma GOF Test			
A-D Test Statistic	22.26	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.798	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.189	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0495	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.744	k star (bias corrected MLE)	0.74
Theta hat (MLE)	246.4	Theta star (bias corrected MLE)	247.8
nu hat (MLE)	544.7	nu star (bias corrected)	541.6
MLE Mean (bias corrected)	183.4	MLE Sd (bias corrected)	213.2
		Approximate Chi Square Value (0.05)	488.6
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	488.4

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	203.2	95% Adjusted Gamma UCL (use when n<50)	203.3
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.94	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.128	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.144	Mean of logged Data	4.406
Maximum of Logged Data	8.345	SD of logged Data	1.147
Assuming Lognormal Distribution			
95% H-UCL	181.2	90% Chebyshev (MVUE) UCL	194.1
95% Chebyshev (MVUE) UCL	210.5	97.5% Chebyshev (MVUE) UCL	233.3
99% Chebyshev (MVUE) UCL	278.1		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	215.2	95% Jackknife UCL	215.3
95% Standard Bootstrap UCL	215	95% Bootstrap-t UCL	224.6
95% Hall's Bootstrap UCL	229.9	95% Percentile Bootstrap UCL	217.5
95% BCA Bootstrap UCL	222.3		
90% Chebyshev(Mean, Sd) UCL	241.4	95% Chebyshev(Mean, Sd) UCL	267.7
97.5% Chebyshev(Mean, Sd) UCL	304.2	99% Chebyshev(Mean, Sd) UCL	375.8
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	267.7		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***nickel***7440-02-0***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
		Number of Missing Observations	0
Minimum	0.191	Mean	19.05
Maximum	359.8	Median	9.997
SD	30.37	Std. Error of Mean	1.587
Coefficient of Variation	1.594	Skewness	5.806
Normal GOF Test			
Shapiro Wilk Test Statistic	0.52	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.281	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	21.67	95% Adjusted-CLT UCL (Chen-1995)	22.18
		95% Modified-t UCL (Johnson-1978)	21.75
Gamma GOF Test			
A-D Test Statistic	15.42	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.784	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.191	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0489	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.021	k star (bias corrected MLE)	1.014
Theta hat (MLE)	18.66	Theta star (bias corrected MLE)	18.78
nu hat (MLE)	747.4	nu star (bias corrected)	742.6
MLE Mean (bias corrected)	19.05	MLE Sd (bias corrected)	18.92
		Approximate Chi Square Value (0.05)	680.4
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	680.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	20.8	95% Adjusted Gamma UCL (use when n<50)	20.8
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.971	Shapiro Wilk Lognormal GOF Test	

5% Shapiro Wilk P Value	6.18E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.107	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-1.653	Mean of logged Data	2.383
Maximum of Logged Data	5.886	SD of logged Data	1.006
Assuming Lognormal Distribution			
95% H-UCL	20.11	90% Chebyshev (MVUE) UCL	21.38
95% Chebyshev (MVUE) UCL	22.95	97.5% Chebyshev (MVUE) UCL	25.12
99% Chebyshev (MVUE) UCL	29.38		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	21.66	95% Jackknife UCL	21.67
95% Standard Bootstrap UCL	21.68	95% Bootstrap-t UCL	22.38
95% Hall's Bootstrap UCL	22.76	95% Percentile Bootstrap UCL	21.74
95% BCA Bootstrap UCL	22.37		
90% Chebyshev(Mean, Sd) UCL	23.82	95% Chebyshev(Mean, Sd) UCL	25.97
97.5% Chebyshev(Mean, Sd) UCL	28.97	99% Chebyshev(Mean, Sd) UCL	34.85
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	25.97		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***nickel-sem***7440-02-0sem***t***umol/g)			
General Statistics			
Total Number of Observations	84	Number of Distinct Observations	84
		Number of Missing Observations	0
Minimum	0.118	Mean	0.484
Maximum	1.741	Median	0.414
SD	0.327	Std. Error of Mean	0.0357
Coefficient of Variation	0.675	Skewness	1.791
Normal GOF Test			
Shapiro Wilk Test Statistic	0.827	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	4.99E-14	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.188	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0967	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.544	95% Adjusted-CLT UCL (Chen-1995)	55.00%
		95% Modified-t UCL (Johnson-1978)	0.545
Gamma GOF Test			
A-D Test Statistic	0.824	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.108	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0984	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.813	k star (bias corrected MLE)	2.72
Theta hat (MLE)	0.172	Theta star (bias corrected MLE)	0.178
nu hat (MLE)	472.5	nu star (bias corrected)	457
MLE Mean (bias corrected)	0.484	MLE Sd (bias corrected)	0.294
		Approximate Chi Square Value (0.05)	408.4
Adjusted Level of Significance	0.0471	Adjusted Chi Square Value	407.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.542	95% Adjusted Gamma UCL (use when n<50)	0.543
Lognormal GOF Test			
Shapiro Wilk Test Statistic	9.71E-01	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.205	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0669	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0967	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			

Lognormal Statistics		
Minimum of Logged Data	-2.133	Mean of logged Data -0.913
Maximum of Logged Data	0.555	SD of logged Data 0.612
Assuming Lognormal Distribution		
95% H-UCL	0.55	90% Chebyshev (MVUE) UCL 0.587
95% Chebyshev (MVUE) UCL	0.634	97.5% Chebyshev (MVUE) UCL 0.7
99% Chebyshev (MVUE) UCL	0.828	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	0.543	95% Jackknife UCL 0.544
95% Standard Bootstrap UCL	0.543	95% Bootstrap-t UCL 0.554
95% Hall's Bootstrap UCL	0.551	95% Percentile Bootstrap UCL 0.547
95% BCA Bootstrap UCL	0.556	
90% Chebyshev(Mean, Sd) UCL	0.591	95% Chebyshev(Mean, Sd) UCL 0.64
97.5% Chebyshev(Mean, Sd) UCL	0.707	99% Chebyshev(Mean, Sd) UCL 0.839
Suggested UCL to Use		
95% H-UCL	0.55	
<p>Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.</p> <p>ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.</p>		
RESULT_VALUE (studyarea***nitrate + nitrite as nitrogen***no2no3***t***mg/kg)		
General Statistics		
Total Number of Observations	349	Number of Distinct Observations 127
Number of Detects	158	Number of Non-Detects 191
Number of Distinct Detects	82	Number of Distinct Non-Detects 85
Minimum Detect	0.41	Minimum Non-Detect 1.4
Maximum Detect	14	Maximum Non-Detect 31
Variance Detects	10.23	Percent Non-Detects 54.73%
Mean Detects	3.447	SD Detects 3.198
Median Detects	1.921	CV Detects 0.928
Skewness Detects	1.383	Kurtosis Detects 0.743
Mean of Logged Detects	0.869	SD of Logged Detects 0.839
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.762	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.256	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0705	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	2.565	Standard Error of Mean 0.15
SD	2.524	95% KM (BCA) UCL 2.818
95% KM (t) UCL	2.813	95% KM (Percentile Bootstrap) UCL 2.826
95% KM (z) UCL	2.813	95% KM Bootstrap t UCL 2.833
90% KM Chebyshev UCL	3.016	95% KM Chebyshev UCL 3.221
97.5% KM Chebyshev UCL	3.505	99% KM Chebyshev UCL 4.062
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	6.957	Anderson-Darling GOF Test
5% A-D Critical Value	0.771	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.185	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	7.59E-02	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.502	k star (bias corrected MLE) 1.478
Theta hat (MLE)	2.295	Theta star (bias corrected MLE) 2.333
nu hat (MLE)	474.6	nu star (bias corrected) 466.9
MLE Mean (bias corrected)	3.447	MLE Sd (bias corrected) 2.836
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.033	nu hat (KM) 720.9
Approximate Chi Square Value (720.92, α)	659.6	Adjusted Chi Square Value (720.92, β) 659.4
95% Gamma Approximate KM-UCL (use when n>=50)	2.803	95% Gamma Adjusted KM-UCL (use when n<50) 2.804
Gamma ROS Statistics using Imputed Non-Detects		

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.0188 Mean	2.489
Maximum	14 Median	1.7
SD	2.432 CV	0.977
k hat (MLE)	1.568 k star (bias corrected MLE)	1.556
Theta hat (MLE)	1.587 Theta star (bias corrected MLE)	1.599
nu hat (MLE)	1094 nu star (bias corrected)	1086
MLE Mean (bias corrected)	2.489 MLE Sd (bias corrected)	1.995
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1011 Adjusted Chi Square Value (N/A, β)	1011
95% Gamma Approximate UCL (use when n>=50)	2.674 95% Gamma Adjusted UCL (use when n<50)	2.675
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.136 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0705 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2.534 Mean in Log Scale	0.672
SD in Original Scale	2.354 SD in Log Scale	0.651
95% t UCL (assumes normality of ROS data)	2.742 95% Percentile Bootstrap UCL	2.748
95% BCA Bootstrap UCL	2.771 95% Bootstrap t UCL	2.766
95% H-UCL (Log ROS)	2.585	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	3.5 Mean in Log Scale	0.966
SD in Original Scale	2.871 SD in Log Scale	0.748
95% t UCL (Assumes normality)	3.753 95% H-Stat UCL	3.756
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	2.813 95% KM (% Bootstrap) UCL	2.826
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***nitrate + nitrite as nitrogen***no2no3***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	349 Number of Distinct Observations	331
Number of Detects	158 Number of Non-Detects	191
Number of Distinct Detects	155 Number of Distinct Non-Detects	181
Minimum Detect	0.0595 Minimum Non-Detect	0.161
Maximum Detect	3.142 Maximum Non-Detect	4.627
Variance Detects	0.452 Percent Non-Detects	54.73%
Mean Detects	0.631 SD Detects	0.672
Median Detects	0.337 CV Detects	1.066
Skewness Detects	1.594 Kurtosis Detects	1.751
Mean of Logged Detects	-0.959 SD of Logged Detects	0.992
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.757 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.241 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0705 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.409 Standard Error of Mean	0.0295
SD	0.52 95% KM (BCA) UCL	0.458
95% KM (t) UCL	0.458 95% KM (Percentile Bootstrap) UCL	0.459
95% KM (z) UCL	0.458 95% KM Bootstrap t UCL	0.463
90% KM Chebyshev UCL	0.498 95% KM Chebyshev UCL	0.538
97.5% KM Chebyshev UCL	0.593 99% KM Chebyshev UCL	0.703
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.946 Anderson-Darling GOF Test	
5% A-D Critical Value	0.78 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.128 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0765 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.141 k star (bias corrected MLE)	1.124
Theta hat (MLE)	0.553 Theta star (bias corrected MLE)	0.561
nu hat (MLE)	360.7 nu star (bias corrected)	355.1
MLE Mean (bias corrected)	0.631 MLE Sd (bias corrected)	0.595
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.62 nu hat (KM)	432.5
Approximate Chi Square Value (432.49, α)	385.3 Adjusted Chi Square Value (432.49, β)	385.1
95% Gamma Approximate KM-UCL (use when n \geq 50)	0.46 95% Gamma Adjusted KM-UCL (use when n<50)	0.46
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	0.356
Maximum	3.142 Median	0.17
SD	0.519 CV	1.459
k hat (MLE)	0.868 k star (bias corrected MLE)	0.862
Theta hat (MLE)	0.41 Theta star (bias corrected MLE)	0.413
nu hat (MLE)	605.5 nu star (bias corrected)	601.7
MLE Mean (bias corrected)	0.356 MLE Sd (bias corrected)	0.383
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (601.66, α)	545.8 Adjusted Chi Square Value (601.66, β)	545.5
95% Gamma Approximate UCL (use when n \geq 50)	0.392 95% Gamma Adjusted UCL (use when n<50)	0.392
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0903 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0705 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.397 Mean in Log Scale	-1.316
SD in Original Scale	0.5 SD in Log Scale	0.758
95% t UCL (assumes normality of ROS data)	0.441 95% Percentile Bootstrap UCL	0.442
95% BCA Bootstrap UCL	0.449 95% Bootstrap t UCL	0.448
95% H-UCL (Log ROS)	0.387	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.532 Mean in Log Scale	-1.052
SD in Original Scale	0.547 SD in Log Scale	0.897
95% t UCL (Assumes normality)	0.58 95% H-Stat UCL	0.576
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.458 95% KM (% Bootstrap) UCL	0.459
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***nitrogen (total kjeldahl) as nitrogen***kn***t***mg/kg)		
General Statistics		
Total Number of Observations	349 Number of Distinct Observations	127
Number of Detects	347 Number of Non-Detects	2
Number of Distinct Detects	125 Number of Distinct Non-Detects	2
Minimum Detect	200 Minimum Non-Detect	4748
Maximum Detect	46400 Maximum Non-Detect	9027
Variance Detects	15858192 Percent Non-Detects	0.57%
Mean Detects	4541 SD Detects	3982
Median Detects	3900 CV Detects	0.877
Skewness Detects	6.632 Kurtosis Detects	63.67
Mean of Logged Detects	8.201 SD of Logged Detects	0.687
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.58 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.156 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0476 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	4535 Standard Error of Mean	212.8
SD	3968 95% KM (BCA) UCL	4901

95% KM (t) UCL	4886	95% KM (Percentile Bootstrap) UCL	4922
95% KM (z) UCL	4885	95% KM Bootstrap t UCL	5013
90% KM Chebyshev UCL	5174	95% KM Chebyshev UCL	5463
97.5% KM Chebyshev UCL	5864	99% KM Chebyshev UCL	6653

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.196	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0737	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0493	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.429	k star (bias corrected MLE)	2.41
Theta hat (MLE)	1870	Theta star (bias corrected MLE)	1884
nu hat (MLE)	1686	nu star (bias corrected)	1672
MLE Mean (bias corrected)	4541	MLE Sd (bias corrected)	2925

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.306	nu hat (KM)	911.8
Approximate Chi Square Value (911.77, α)	842.7	Adjusted Chi Square Value (911.77, β)	842.4
95% Gamma Approximate KM-UCL (use when n>=50)	4907	95% Gamma Adjusted KM-UCL (use when n<50)	4908

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	200	Mean	4533
Maximum	46400	Median	3900
SD	3972	CV	0.876
k hat (MLE)	2.438	k star (bias corrected MLE)	2.419
Theta hat (MLE)	1860	Theta star (bias corrected MLE)	1874
nu hat (MLE)	1701	nu star (bias corrected)	1688
MLE Mean (bias corrected)	4533	MLE Sd (bias corrected)	2915
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1594	Adjusted Chi Square Value (N/A, β)	1593
95% Gamma Approximate UCL (use when n>=50)	4802	95% Gamma Adjusted UCL (use when n<50)	4803

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.113	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0476	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	4533	Mean in Log Scale	8.2
SD in Original Scale	3972	SD in Log Scale	0.685
95% t UCL (assumes normality of ROS data)	4884	95% Percentile Bootstrap UCL	4907
95% BCA Bootstrap UCL	4989	95% Bootstrap t UCL	5010
95% H-UCL (Log ROS)	4936		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4535	Mean in Log Scale	8.201
SD in Original Scale	3972	SD in Log Scale	0.685
95% t UCL (Assumes normality)	4886	95% H-Stat UCL	4939
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	4901		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***nitrogen (total kjeldahl) as nitrogen***kn***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	349	Number of Distinct Observations	342
Number of Detects	347	Number of Non-Detects	2
Number of Distinct Detects	340	Number of Distinct Non-Detects	2
Minimum Detect	31.58	Minimum Non-Detect	539.5
Maximum Detect	5121	Maximum Non-Detect	1007
Variance Detects	179304	Percent Non-Detects	0.57%
Mean Detects	571.4	SD Detects	423.4
Median Detects	510.8	CV Detects	0.741
Skewness Detects	6.163	Kurtosis Detects	58.54

Mean of Logged Detects	6.184	SD of Logged Detects	0.58
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.627	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.14	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0476	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	570.7	Standard Error of Mean	22.63
SD	422	95% KM (BCA) UCL	608.5
95% KM (t) UCL	608	95% KM (Percentile Bootstrap) UCL	610.5
95% KM (z) UCL	607.9	95% KM Bootstrap t UCL	618.6
90% KM Chebyshev UCL	638.5	95% KM Chebyshev UCL	669.3
97.5% KM Chebyshev UCL	712	99% KM Chebyshev UCL	795.8
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.119	Anderson-Darling GOF Test	
5% A-D Critical Value	0.76	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0479	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0492	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.196	k star (bias corrected MLE)	3.17
Theta hat (MLE)	178.8	Theta star (bias corrected MLE)	180.3
nu hat (MLE)	2218	nu star (bias corrected)	2200
MLE Mean (bias corrected)	571.4	MLE Sd (bias corrected)	321
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.829	nu hat (KM)	1276
Approximate Chi Square Value (N/A, α)	1194	Adjusted Chi Square Value (N/A, β)	1194
95% Gamma Approximate KM-UCL (use when n>=50)	609.8	95% Gamma Adjusted KM-UCL (use when n<50)	610
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	31.58	Mean	570.5
Maximum	5121	Median	508.5
SD	422.4	CV	0.74
k hat (MLE)	3.206	k star (bias corrected MLE)	3.18
Theta hat (MLE)	178	Theta star (bias corrected MLE)	179.4
nu hat (MLE)	2238	nu star (bias corrected)	2220
MLE Mean (bias corrected)	570.5	MLE Sd (bias corrected)	319.9
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2111	Adjusted Chi Square Value (N/A, β)	2111
95% Gamma Approximate UCL (use when n>=50)	599.8	95% Gamma Adjusted UCL (use when n<50)	599.9
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0766	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0476	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	570.5	Mean in Log Scale	6.183
SD in Original Scale	422.4	SD in Log Scale	0.579
95% t UCL (assumes normality of ROS data)	607.8	95% Percentile Bootstrap UCL	610.1
95% BCA Bootstrap UCL	618.7	95% Bootstrap t UCL	616.4
95% H-UCL (Log ROS)	606		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	570.4	Mean in Log Scale	6.182
SD in Original Scale	422.5	SD in Log Scale	0.579
95% t UCL (Assumes normality)	607.7	95% H-Stat UCL	605.9
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	608.5	95% GROS Approximate Gamma UCL	599.8
95% Approximate Gamma KM-UCL	609.8		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***nonachlor, cis-***5103-73-1***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	366	Number of Distinct Observations 360
Number of Detects	301	Number of Non-Detects 65
Number of Distinct Detects	298	Number of Distinct Non-Detects 63
Minimum Detect	4.00E-05	Minimum Non-Detect 1.72E-05
Maximum Detect	0.00825	Maximum Non-Detect 0.0142
Variance Detects	1.69E-06	Percent Non-Detects 17.76%
Mean Detects	0.00122	SD Detects 0.0013
Median Detects	7.93E-04	CV Detects 1.062
Skewness Detects	2.369	Kurtosis Detects 7.519
Mean of Logged Detects	-7.2	SD of Logged Detects 1.042
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.758	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	1.81E-01	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0511	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00111	Standard Error of Mean 6.92E-05
SD	0.00127	95% KM (BCA) UCL 0.00123
95% KM (t) UCL	0.00122	95% KM (Percentile Bootstrap) UCL 0.00123
95% KM (z) UCL	0.00122	95% KM Bootstrap t UCL 0.00123
90% KM Chebyshev UCL	0.00132	95% KM Chebyshev UCL 0.00141
97.5% KM Chebyshev UCL	0.00154	99% KM Chebyshev UCL 0.0018
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.789	Anderson-Darling GOF Test
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0681	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0534	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.152	k star (bias corrected MLE) 1.143
Theta hat (MLE)	0.00106	Theta star (bias corrected MLE) 0.00107
nu hat (MLE)	693.5	nu star (bias corrected) 688
MLE Mean (bias corrected)	0.00122	MLE Sd (bias corrected) 0.00114
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.766	nu hat (KM) 560.9
Approximate Chi Square Value (560.86, α)	506.9	Adjusted Chi Square Value (560.86, β) 506.7
95% Gamma Approximate KM-UCL (use when n>=50)	0.00123	95% Gamma Adjusted KM-UCL (use when n<50) 0.00123
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	4.00E-05	Mean 0.00278
Maximum	0.01	Median 0.00109
SD	0.00356	CV 1.28
k hat (MLE)	0.707	k star (bias corrected MLE) 0.703
Theta hat (MLE)	0.00394	Theta star (bias corrected MLE) 0.00396
nu hat (MLE)	517.2	nu star (bias corrected) 514.3
MLE Mean (bias corrected)	0.00278	MLE Sd (bias corrected) 0.00332
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (514.32, α)	462.7	Adjusted Chi Square Value (514.32, β) 462.5
95% Gamma Approximate UCL (use when n>=50)	0.00309	95% Gamma Adjusted UCL (use when n<50) 0.00309
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0415	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0511	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00107	Mean in Log Scale -7.38
SD in Original Scale	0.00123	SD in Log Scale 1.092
95% t UCL (assumes normality of ROS data)	0.00118	95% Percentile Bootstrap UCL 0.00118
95% BCA Bootstrap UCL	0.00119	95% Bootstrap t UCL 0.00118
95% H-UCL (Log ROS)	0.00128	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-7.456	95% H-UCL (KM -Log) 0.00161
KM SD (logged)	1.313	95% Critical H Value (KM-Log) 2.401
KM Standard Error of Mean (logged)	0.0733	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.0014	Mean in Log Scale -7.258
SD in Original Scale	0.00156	SD in Log Scale 1.333
95% t UCL (Assumes normality)	0.00153	95% H-Stat UCL 0.00203
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics
Detected Data appear Lognormal Distributed at 5% Significance Level

Suggested UCL to Use
95% KM (Chebyshev) UCL 0.00141

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***nonachlor, cis-***5103-73-1***t***ug/kg)

General Statistics		
Total Number of Observations	366	Number of Distinct Observations 285
Number of Detects	301	Number of Non-Detects 65
Number of Distinct Detects	234	Number of Distinct Non-Detects 57
Minimum Detect	0.14	Minimum Non-Detect 0.11
Maximum Detect	113	Maximum Non-Detect 123.4
Variance Detects	243.9	Percent Non-Detects 17.76%
Mean Detects	12.44	SD Detects 15.62
Median Detects	7.1	CV Detects 1.256
Skewness Detects	2.801	Kurtosis Detects 11.12
Mean of Logged Detects	1.768	SD of Logged Detects 1.351
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.721	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.216	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0511	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	11.14	Standard Error of Mean 0.815
SD	15.06	95% KM (BCA) UCL 12.49
95% KM (t) UCL	12.49	95% KM (Percentile Bootstrap) UCL 12.44
95% KM (z) UCL	12.48	95% KM Bootstrap t UCL 12.62
90% KM Chebyshev UCL	13.59	95% KM Chebyshev UCL 14.7
97.5% KM Chebyshev UCL	16.23	99% KM Chebyshev UCL 19.25
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.785	Anderson-Darling GOF Test
5% A-D Critical Value	0.795	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0901	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.054	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.79	k star (bias corrected MLE) 0.785
Theta hat (MLE)	15.74	Theta star (bias corrected MLE) 15.85
nu hat (MLE)	475.7	nu star (bias corrected) 472.3
MLE Mean (bias corrected)	12.44	MLE Sd (bias corrected) 14.04
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.548	nu hat (KM) 401
Approximate Chi Square Value (401.04, α)	355.6	Adjusted Chi Square Value (401.04, β) 355.5
95% Gamma Approximate KM-UCL (use when n>=50)	12.57	95% Gamma Adjusted KM-UCL (use when n<50) 12.57
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 10.72
Maximum	113	Median 5.709
SD	14.7	CV 1.372
k hat (MLE)	0.523	k star (bias corrected MLE) 0.521
Theta hat (MLE)	20.49	Theta star (bias corrected MLE) 20.58
nu hat (MLE)	382.9	nu star (bias corrected) 381.1
MLE Mean (bias corrected)	10.72	MLE Sd (bias corrected) 14.85
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (381.11, α)	336.9	Adjusted Chi Square Value (381.11, β) 336.7
95% Gamma Approximate UCL (use when n>=50)	12.12	95% Gamma Adjusted UCL (use when n<50) 12.13

Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0911	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0511	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	10.66	Mean in Log Scale 1.51
SD in Original Scale	14.7	SD in Log Scale 1.439
95% t UCL (assumes normality of ROS data)	11.93	95% Percentile Bootstrap UCL 11.98
95% BCA Bootstrap UCL	12.02	95% Bootstrap t UCL 12.02
95% H-UCL (Log ROS)	15.4	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	14.05	Mean in Log Scale 1.669
SD in Original Scale	17.51	SD in Log Scale 1.642
95% t UCL (Assumes normality)	15.56	95% H-Stat UCL 25.8
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	14.7	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***nonachlor, trans-***39765-80-5***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	331	Number of Distinct Observations 327
Number of Detects	301	Number of Non-Detects 30
Number of Distinct Detects	297	Number of Distinct Non-Detects 30
Minimum Detect	9.77E-06	Minimum Non-Detect 0.247
Maximum Detect	0.219	Maximum Non-Detect 0.575
Variance Detects	1.67E-04	Percent Non-Detects 9.06%
Mean Detects	0.00363	SD Detects 0.0129
Median Detects	0.00165	CV Detects 3.56
Skewness Detects	15.68	Kurtosis Detects 262.2
Mean of Logged Detects	-6.574	SD of Logged Detects 1.448
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.201	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.39	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0511	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00363	Standard Error of Mean 7.44E-04
SD	0.0129	95% KM (BCA) UCL 0.00521
95% KM (t) UCL	0.00486	95% KM (Percentile Bootstrap) UCL 0.00508
95% KM (z) UCL	0.00485	95% KM Bootstrap t UCL 0.00751
90% KM Chebyshev UCL	0.00586	95% KM Chebyshev UCL 0.00687
97.5% KM Chebyshev UCL	0.00828	99% KM Chebyshev UCL 0.011
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.32E+28	Anderson-Darling GOF Test
5% A-D Critical Value	0.808	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0731	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0545	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.641	k star (bias corrected MLE) 0.637
Theta hat (MLE)	0.00566	Theta star (bias corrected MLE) 0.00569
nu hat (MLE)	386	nu star (bias corrected) 383.5
MLE Mean (bias corrected)	0.00363	MLE Sd (bias corrected) 0.00454
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0792	nu hat (KM) 52.4
Approximate Chi Square Value (52.40, α)	36.77	Adjusted Chi Square Value (52.40, β) 36.72
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00517	95% Gamma Adjusted KM-UCL (use when $n < 50$) 0.00518
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		

For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	9.77E-06 Mean	0.0042
Maximum	0.219 Median	0.00213
SD	0.0124 CV	2.961
k hat (MLE)	0.66 k star (bias corrected MLE)	0.656
Theta hat (MLE)	0.00637 Theta star (bias corrected MLE)	0.00641
nu hat (MLE)	436.8 nu star (bias corrected)	434.2
MLE Mean (bias corrected)	0.0042 MLE Sd (bias corrected)	0.00519
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (434.16, α)	386.9 Adjusted Chi Square Value (434.16, β)	386.7
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00472 95% Gamma Adjusted UCL (use when $n < 50$)	0.00472
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0853 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0511 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.00343 Mean in Log Scale	-6.574
SD in Original Scale	0.0123 SD in Log Scale	1.381
95% t UCL (assumes normality of ROS data)	0.00454 95% Percentile Bootstrap UCL	0.00476
95% BCA Bootstrap UCL	0.00553 95% Bootstrap t UCL	0.00703
95% H-UCL (Log ROS)	0.00437	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.0199 Mean in Log Scale	-6.133
SD in Original Scale	0.0543 SD in Log Scale	1.965
95% t UCL (Assumes normality)	0.0248 95% H-Stat UCL	0.0208
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	0.00687	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***nonachlor, trans-***39765-80-5***t***ug/kg)		
General Statistics		
Total Number of Observations	331 Number of Distinct Observations	287
Number of Detects	301 Number of Non-Detects	30
Number of Distinct Detects	260 Number of Distinct Non-Detects	27
Minimum Detect	0.1 Minimum Non-Detect	2533
Maximum Detect	2420 Maximum Non-Detect	5002
Variance Detects	20536 Percent Non-Detects	9.06%
Mean Detects	37.65 SD Detects	143.3
Median Detects	12.7 CV Detects	3.806
Skewness Detects	15.46 Kurtosis Detects	256.7
Mean of Logged Detects	2.338 SD of Logged Detects	1.769
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.204 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.397 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0511 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	37.65 Standard Error of Mean	8.26
SD	143.1 95% KM (BCA) UCL	54.73
95% KM (t) UCL	51.28 95% KM (Percentile Bootstrap) UCL	54.27
95% KM (z) UCL	51.24 95% KM Bootstrap t UCL	80.54
90% KM Chebyshev UCL	62.43 95% KM Chebyshev UCL	73.66
97.5% KM Chebyshev UCL	89.23 99% KM Chebyshev UCL	119.8
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.666 Anderson-Darling GOF Test	
5% A-D Critical Value	0.823 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0962 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0551 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.493 k star (bias corrected MLE)	0.49

Theta hat (MLE)	76.35	Theta star (bias corrected MLE)	76.77
nu hat (MLE)	296.9	nu star (bias corrected)	295.3
MLE Mean (bias corrected)	37.65	MLE Sd (bias corrected)	5376.00%
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0693	nu hat (KM)	45.85
Approximate Chi Square Value (45.85, α)	31.32	Adjusted Chi Square Value (45.85, β)	31.26
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	55.13	95% Gamma Adjusted KM-UCL (use when $n < 50$)	55.22
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	34.93
Maximum	2420	Median	9.3
SD	136.9	CV	3.92
k hat (MLE)	0.485	k star (bias corrected MLE)	0.482
Theta hat (MLE)	72.09	Theta star (bias corrected MLE)	72.45
nu hat (MLE)	320.7	nu star (bias corrected)	319.2
MLE Mean (bias corrected)	34.93	MLE Sd (bias corrected)	50.31
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (319.17, α)	278.8	Adjusted Chi Square Value (319.17, β)	278.6
95% Gamma Approximate UCL (use when $n \geq 50$)	39.99	95% Gamma Adjusted UCL (use when $n < 50$)	40.01
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.117	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0511	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	35.23	Mean in Log Scale	2.338
SD in Original Scale	136.9	SD in Log Scale	1.69
95% t UCL (assumes normality of ROS data)	47.64	95% Percentile Bootstrap UCL	50.39
95% BCA Bootstrap UCL	61.3	95% Bootstrap t UCL	73.48
95% H-UCL (Log ROS)	55.82		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	201.1	Mean in Log Scale	2.806
SD in Original Scale	541.9	SD in Log Scale	2.248
95% t UCL (Assumes normality)	250.2	95% H-Stat UCL	314.4
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	89.23		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***oxychlordane***27304-13-8***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	338
Number of Detects	117	Number of Non-Detects	249
Number of Distinct Detects	107	Number of Distinct Non-Detects	239
Minimum Detect	8.14E-06	Minimum Non-Detect	3.26E-06
Maximum Detect	0.0094	Maximum Non-Detect	0.0142
Variance Detects	1.02E-06	Percent Non-Detects	68.03%
Mean Detects	2.18E-04	SD Detects	0.00101
Median Detects	5.27E-05	CV Detects	4.649
Skewness Detects	7.826	Kurtosis Detects	65.12
Mean of Logged Detects	-9.759	SD of Logged Detects	1.094
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.199	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.436	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0819	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	8.69E-05	Standard Error of Mean	3.19E-05
SD	5.91E-04	95% KM (BCA) UCL	1.46E-04
95% KM (t) UCL	1.39E-04	95% KM (Percentile Bootstrap) UCL	1.43E-04

95% KM (z) UCL	1.39E-04	95% KM Bootstrap t UCL	3.95E-04
90% KM Chebyshev UCL	1.82E-04	95% KM Chebyshev UCL	2.26E-04
97.5% KM Chebyshev UCL	2.86E-04	99% KM Chebyshev UCL	4.04E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	17.86	Anderson-Darling GOF Test	
5% A-D Critical Value	0.823	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.314	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0902	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.482	k star (bias corrected MLE)	0.475
Theta hat (MLE)	4.52E-04	Theta star (bias corrected MLE)	4.58E-04
nu hat (MLE)	1.13E+02	nu star (bias corrected)	#####
MLE Mean (bias corrected)	2.18E-04	MLE Sd (bias corrected)	3.16E-04
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0216	nu hat (KM)	15.79
Approximate Chi Square Value (15.79, α)	7.815	Adjusted Chi Square Value (15.79, β)	7.793
95% Gamma Approximate KM-UCL (use when n \geq 50)	1.76E-04	95% Gamma Adjusted KM-UCL (use when n<50)	1.76E-04
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	8.14E-06	Mean	0.00687
Maximum	0.01	Median	0.01
SD	0.0046	CV	0.67
k hat (MLE)	0.499	k star (bias corrected MLE)	0.497
Theta hat (MLE)	0.0138	Theta star (bias corrected MLE)	0.0138
nu hat (MLE)	365.5	nu star (bias corrected)	363.8
MLE Mean (bias corrected)	0.00687	MLE Sd (bias corrected)	0.00975
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (363.79, α)	320.6	Adjusted Chi Square Value (363.79, β)	320.4
95% Gamma Approximate UCL (use when n \geq 50)	0.0078	95% Gamma Adjusted UCL (use when n<50)	0.0078
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.118	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0819	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.86E-05	Mean in Log Scale	-10.81
SD in Original Scale	5.78E-04	SD in Log Scale	1.014
95% t UCL (assumes normality of ROS data)	1.28E-04	95% Percentile Bootstrap UCL	1.32E-04
95% BCA Bootstrap UCL	1.61E-04	95% Bootstrap t UCL	3.97E-04
95% H-UCL (Log ROS)	3.79E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.55E-04	Mean in Log Scale	-9.873
SD in Original Scale	0.00136	SD in Log Scale	1.639
95% t UCL (Assumes normality)	5.73E-04	95% H-Stat UCL	2.50E-04
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	1.46E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***oxychlordan***27304-13-8***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	285
Number of Detects	117	Number of Non-Detects	249
Number of Distinct Detects	103	Number of Distinct Non-Detects	208
Minimum Detect	0.037	Minimum Non-Detect	0.017
Maximum Detect	102.7	Maximum Non-Detect	123.4
Variance Detects	183.5	Percent Non-Detects	68.03%
Mean Detects	2.724	SD Detects	13.55
Median Detects	0.482	CV Detects	4.974
Skewness Detects	6.8	Kurtosis Detects	46.65

Mean of Logged Detects	-0.739	SD of Logged Detects	1.266
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.189	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.464	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0819	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.99	Standard Error of Mean	0.414
SD	7.804	95% KM (BCA) UCL	1.803
95% KM (t) UCL	1.673	95% KM (Percentile Bootstrap) UCL	1.781
95% KM (z) UCL	1.672	95% KM Bootstrap t UCL	9.164
90% KM Chebyshev UCL	2.233	95% KM Chebyshev UCL	2.796
97.5% KM Chebyshev UCL	3.577	99% KM Chebyshev UCL	5.112
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	19.4	Anderson-Darling GOF Test	
5% A-D Critical Value	0.848	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.329	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0914	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.381	k star (bias corrected MLE)	0.377
Theta hat (MLE)	7.151	Theta star (bias corrected MLE)	7.229
nu hat (MLE)	89.13	nu star (bias corrected)	8817.00%
MLE Mean (bias corrected)	2.724	MLE Sd (bias corrected)	4.437
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0161	nu hat (KM)	11.79
Approximate Chi Square Value (11.79, α)	5.087	Adjusted Chi Square Value (11.79, β)	5.07
95% Gamma Approximate KM-UCL (use when n>=50)	2.295	95% Gamma Adjusted KM-UCL (use when n<50)	2.302
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.878
Maximum	102.7	Median	0.01
SD	7.742	CV	8.822
k hat (MLE)	0.223	k star (bias corrected MLE)	0.223
Theta hat (MLE)	3.93	Theta star (bias corrected MLE)	3.93
nu hat (MLE)	163.5	nu star (bias corrected)	163.5
MLE Mean (bias corrected)	0.878	MLE Sd (bias corrected)	1.857
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (163.46, α)	134.9	Adjusted Chi Square Value (163.46, β)	134.8
95% Gamma Approximate UCL (use when n>=50)	1.063	95% Gamma Adjusted UCL (use when n<50)	1.064
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.117	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0819	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.927	Mean in Log Scale	-2.028
SD in Original Scale	7.736	SD in Log Scale	1.227
95% t UCL (assumes normality of ROS data)	1.594	95% Percentile Bootstrap UCL	1.628
95% BCA Bootstrap UCL	2.019	95% Bootstrap t UCL	9.669
95% H-UCL (Log ROS)	0.324		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	4.615	Mean in Log Scale	-0.948
SD in Original Scale	14.3	SD in Log Scale	1.779
95% t UCL (Assumes normality)	5.848	95% H-Stat UCL	2.461
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	1.803		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***perylene***198-55-0***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	334
		Number of Missing Observations	0
Minimum	0.0177	Mean	0.156
Maximum	1.231	Median	0.126
SD	0.113	Std. Error of Mean	0.00615
Coefficient of Variation	0.723	Skewness	3.889
Normal GOF Test			
Shapiro Wilk Test Statistic	0.718	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.202	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0484	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.166	95% Adjusted-CLT UCL (Chen-1995)	0.167
		95% Modified-t UCL (Johnson-1978)	0.166
Gamma GOF Test			
A-D Test Statistic	6.914	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.76	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.121	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.05	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.17	k star (bias corrected MLE)	3.144
Theta hat (MLE)	0.0491	Theta star (bias corrected MLE)	0.0495
nu hat (MLE)	2124	nu star (bias corrected)	2106
MLE Mean (bias corrected)	0.156	MLE Sd (bias corrected)	0.0878
		Approximate Chi Square Value (0.05)	2001
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2000
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.164	95% Adjusted Gamma UCL (use when n<50)	0.164
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.981	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.224	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0775	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0484	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-4.035	Mean of logged Data	-2.026
Maximum of Logged Data	0.208	SD of logged Data	0.55
Assuming Lognormal Distribution			
95% H-UCL	0.162	90% Chebyshev (MVUE) UCL	0.168
95% Chebyshev (MVUE) UCL	0.175	97.5% Chebyshev (MVUE) UCL	0.184
99% Chebyshev (MVUE) UCL	0.202		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.166	95% Jackknife UCL	0.166
95% Standard Bootstrap UCL	0.166	95% Bootstrap-t UCL	0.167
95% Hall's Bootstrap UCL	0.169	95% Percentile Bootstrap UCL	0.166
95% BCA Bootstrap UCL	0.166		
90% Chebyshev(Mean, Sd) UCL	0.174	95% Chebyshev(Mean, Sd) UCL	0.182
97.5% Chebyshev(Mean, Sd) UCL	0.194	99% Chebyshev(Mean, Sd) UCL	0.217
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	0.182		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***perylene***198-55-0***t***ug/kg)

General Statistics

Total Number of Observations	335	Number of Distinct Observations	261
Minimum	43.5	Number of Missing Observations	0
Maximum	8850	Mean	1247
SD	1052	Median	965
Coefficient of Variation	0.843	Std. Error of Mean	57.46
		Skewness	2.86
Normal GOF Test			
Shapiro Wilk Test Statistic	0.745	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.176	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0484	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1342	95% Adjusted-CLT UCL (Chen-1995)	1351
		95% Modified-t UCL (Johnson-1978)	1344
Gamma GOF Test			
A-D Test Statistic	4.358	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.765	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0834	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0503	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.112	k star (bias corrected MLE)	2.095
Theta hat (MLE)	590.4	Theta star (bias corrected MLE)	595.2
nu hat (MLE)	1415	nu star (bias corrected)	1404
MLE Mean (bias corrected)	1247	MLE Sd (bias corrected)	861.6
		Approximate Chi Square Value (0.05)	1318
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1318
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1329	95% Adjusted Gamma UCL (use when n<50)	1329
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.978	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0868	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0515	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0484	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.773	Mean of logged Data	6.874
Maximum of Logged Data	9.088	SD of logged Data	0.715
Assuming Lognormal Distribution			
95% H-UCL	1345	90% Chebyshev (MVUE) UCL	1410
95% Chebyshev (MVUE) UCL	1483	97.5% Chebyshev (MVUE) UCL	1586
99% Chebyshev (MVUE) UCL	1787		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1342	95% Jackknife UCL	1342
95% Standard Bootstrap UCL	1343	95% Bootstrap-t UCL	1351
95% Hall's Bootstrap UCL	1356	95% Percentile Bootstrap UCL	1339
95% BCA Bootstrap UCL	1351		
90% Chebyshev(Mean, Sd) UCL	1420	95% Chebyshev(Mean, Sd) UCL	1498
97.5% Chebyshev(Mean, Sd) UCL	1606	99% Chebyshev(Mean, Sd) UCL	1819
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1498		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***phenanthrene***85-01-8***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	364
Number of Detects	349	Number of Non-Detects	17
Number of Distinct Detects	347	Number of Distinct Non-Detects	17
Minimum Detect	0.0619	Minimum Non-Detect	0.583
Maximum Detect	12.56	Maximum Non-Detect	1.209
Variance Detects	1.016	Percent Non-Detects	4.65%

Mean Detects	0.535	SD Detects	1.008
Median Detects	0.303	CV Detects	1.884
Skewness Detects	7.406	Kurtosis Detects	70.55
Mean of Logged Detects	-1.052	SD of Logged Detects	0.721
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.359	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.335	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0474	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.525	Standard Error of Mean	0.0516
SD	0.984	95% KM (BCA) UCL	0.621
95% KM (t) UCL	0.61	95% KM (Percentile Bootstrap) UCL	0.617
95% KM (z) UCL	0.609	95% KM Bootstrap t UCL	0.645
90% KM Chebyshev UCL	0.679	95% KM Chebyshev UCL	0.749
97.5% KM Chebyshev UCL	0.847	99% KM Chebyshev UCL	1.038
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	33.52	Anderson-Darling GOF Test	
5% A-D Critical Value	0.777	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.231	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0498	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.314	k star (bias corrected MLE)	1.305
Theta hat (MLE)	0.407	Theta star (bias corrected MLE)	0.41
nu hat (MLE)	917.3	nu star (bias corrected)	910.7
MLE Mean (bias corrected)	0.535	MLE Sd (bias corrected)	0.468
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.284	nu hat (KM)	207.9
Approximate Chi Square Value (207.90, α)	175.5	Adjusted Chi Square Value (207.90, β)	175.4
95% Gamma Approximate KM-UCL (use when n>=50)	0.621	95% Gamma Adjusted KM-UCL (use when n<50)	0.622
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.0619	Mean	0.521
Maximum	12.56	Median	0.297
SD	0.986	CV	1.892
k hat (MLE)	1.339	k star (bias corrected MLE)	1.33
Theta hat (MLE)	0.389	Theta star (bias corrected MLE)	0.392
nu hat (MLE)	980.1	nu star (bias corrected)	973.4
MLE Mean (bias corrected)	0.521	MLE Sd (bias corrected)	0.452
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (973.41, α)	902	Adjusted Chi Square Value (973.41, β)	901.7
95% Gamma Approximate UCL (use when n>=50)	0.563	95% Gamma Adjusted UCL (use when n<50)	0.563
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.143	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0474	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.525	Mean in Log Scale	-1.056
SD in Original Scale	0.985	SD in Log Scale	0.704
95% t UCL (assumes normality of ROS data)	0.61	95% Percentile Bootstrap UCL	0.612
95% BCA Bootstrap UCL	0.639	95% Bootstrap t UCL	0.653
95% H-UCL (Log ROS)	0.478		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.529	Mean in Log Scale	-1.046
SD in Original Scale	0.985	SD in Log Scale	0.706
95% t UCL (Assumes normality)	0.614	95% H-Stat UCL	0.484
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.621		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***phenanthrene***85-01-8***t***ug/kg)

General Statistics		
Total Number of Observations	366	Number of Distinct Observations 295
Number of Detects	349	Number of Non-Detects 17
Number of Distinct Detects	279	Number of Distinct Non-Detects 16
Minimum Detect	143	Minimum Non-Detect 6600
Maximum Detect	189557	Maximum Non-Detect 10505
Variance Detects	1.97E+08	Percent Non-Detects 4.65%
Mean Detects	5354	SD Detects 14025
Median Detects	2540	CV Detects 2.62
Skewness Detects	8.7	Kurtosis Detects 96.23
Mean of Logged Detects	7.867	SD of Logged Detects 0.992
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.314	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.358	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0474	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	5226	Standard Error of Mean 717
SD	13693	95% KM (BCA) UCL 6546
95% KM (t) UCL	6408	95% KM (Percentile Bootstrap) UCL 6498
95% KM (z) UCL	6405	95% KM Bootstrap t UCL 7131
90% KM Chebyshev UCL	7377	95% KM Chebyshev UCL 8351
97.5% KM Chebyshev UCL	9704	99% KM Chebyshev UCL 12360
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	23.13	Anderson-Darling GOF Test
5% A-D Critical Value	0.793	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.204	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0505	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.823	k star (bias corrected MLE) 0.818
Theta hat (MLE)	6502	Theta star (bias corrected MLE) 6543
nu hat (MLE)	574.7	nu star (bias corrected) 571.1
MLE Mean (bias corrected)	5354	MLE Sd (bias corrected) 5918
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.146	nu hat (KM) 106.6
Approximate Chi Square Value (106.62, α)	83.79	Adjusted Chi Square Value (106.62, β) 83.71
95% Gamma Approximate KM-UCL (use when n>=50)	6650	95% Gamma Adjusted KM-UCL (use when n<50) 6656
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 5153
Maximum	189557	Median 2475
SD	13726	CV 2.663
k hat (MLE)	0.786	k star (bias corrected MLE) 0.782
Theta hat (MLE)	6553	Theta star (bias corrected MLE) 6592
nu hat (MLE)	575.7	nu star (bias corrected) 572.3
MLE Mean (bias corrected)	5153	MLE Sd (bias corrected) 5828
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (572.27, α)	517.8	Adjusted Chi Square Value (572.27, β) 517.6
95% Gamma Approximate UCL (use when n>=50)	5696	95% Gamma Adjusted UCL (use when n<50) 5698
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0835	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0474	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	5212	Mean in Log Scale 7.861
SD in Original Scale	13710	SD in Log Scale 0.969
95% t UCL (assumes normality of ROS data)	6394	95% Percentile Bootstrap UCL 6465
95% BCA Bootstrap UCL	6893	95% Bootstrap t UCL 7079
95% H-UCL (Log ROS)	4620	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	5286	Mean in Log Scale 7.886

SD in Original Scale	13699	SD in Log Scale	0.973
95% t UCL (Assumes normality)	6.47E+03	95% H-Stat UCL	4749
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	6546		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***phenol***108-95-2***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	364
Number of Detects	114	Number of Non-Detects	252
Number of Distinct Detects	114	Number of Distinct Non-Detects	251
Minimum Detect	0.00271	Minimum Non-Detect	0.00704
Maximum Detect	0.704	Maximum Non-Detect	1.209
Variance Detects	0.00495	Percent Non-Detects	68.85%
Mean Detects	0.0299	SD Detects	0.0704
Median Detects	1.15E-02	CV Detects	2.355
Skewness Detects	8.045	Kurtosis Detects	75.71
Mean of Logged Detects	-4.247	SD of Logged Detects	1.054
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.357	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.35	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.083	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0184	Standard Error of Mean	0.00247
SD	0.0429	95% KM (BCA) UCL	0.0234
95% KM (t) UCL	0.0225	95% KM (Percentile Bootstrap) UCL	0.0228
95% KM (z) UCL	0.0225	95% KM Bootstrap t UCL	0.0253
90% KM Chebyshev UCL	0.0258	95% KM Chebyshev UCL	0.0292
97.5% KM Chebyshev UCL	0.0339	99% KM Chebyshev UCL	0.043
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.5	Anderson-Darling GOF Test	
5% A-D Critical Value	0.793	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.189	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	8.90E-02	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.805	k star (bias corrected MLE)	0.789
Theta hat (MLE)	0.0371	Theta star (bias corrected MLE)	0.0379
nu hat (MLE)	183.5	nu star (bias corrected)	180
MLE Mean (bias corrected)	0.0299	MLE Sd (bias corrected)	0.0336
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.184	nu hat (KM)	134.7
Approximate Chi Square Value (134.68, α)	108.9	Adjusted Chi Square Value (134.68, β)	108.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.0228	95% Gamma Adjusted KM-UCL (use when n<50)	0.0228
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00271	Mean	0.0162
Maximum	0.704	Median	0.01
SD	0.0402	CV	2.484
k hat (MLE)	1.494	k star (bias corrected MLE)	1.484
Theta hat (MLE)	0.0108	Theta star (bias corrected MLE)	0.0109
nu hat (MLE)	1094	nu star (bias corrected)	1086
MLE Mean (bias corrected)	0.0162	MLE Sd (bias corrected)	0.0133
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1011	Adjusted Chi Square Value (N/A, β)	1010
95% Gamma Approximate UCL (use when n>=50)	0.0174	95% Gamma Adjusted UCL (use when n<50)	0.0174
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.1	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.083	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0163	Mean in Log Scale	-4.492
SD in Original Scale	0.0402	SD in Log Scale	0.617
95% t UCL (assumes normality of ROS data)	0.0197	95% Percentile Bootstrap UCL	0.0201
95% BCA Bootstrap UCL	0.0225	95% Bootstrap t UCL	0.0242
95% H-UCL (Log ROS)	0.0144		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0779	Mean in Log Scale	-3.42
SD in Original Scale	0.118	SD in Log Scale	1.306
95% t UCL (Assumes normality)	0.088	95% H-Stat UCL	0.0904
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (BCA) UCL	0.0234

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***phenol***108-95-2***t***ug/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	287
Number of Detects	114	Number of Non-Detects	252
Number of Distinct Detects	103	Number of Distinct Non-Detects	194
Minimum Detect	14.8	Minimum Non-Detect	81
Maximum Detect	3140	Maximum Non-Detect	14650
Variance Detects	122479	Percent Non-Detects	68.85%
Mean Detects	198	SD Detects	350
Median Detects	95.75	CV Detects	1.767
Skewness Detects	5.902	Kurtosis Detects	45.14
Mean of Logged Detects	4.62	SD of Logged Detects	1.099

Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.493	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.3	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.083	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	126.8	Standard Error of Mean	14.19
SD	230.6	95% KM (BCA) UCL	152
95% KM (t) UCL	150.2	95% KM (Percentile Bootstrap) UCL	151.2
95% KM (z) UCL	150.2	95% KM Bootstrap t UCL	161.6
90% KM Chebyshev UCL	169.4	95% KM Chebyshev UCL	188.7
97.5% KM Chebyshev UCL	215.4	99% KM Chebyshev UCL	268

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.913	Anderson-Darling GOF Test	
5% A-D Critical Value	0.789	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0888	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.877	k star (bias corrected MLE)	0.86
Theta hat (MLE)	225.8	Theta star (bias corrected MLE)	230.3
nu hat (MLE)	200	nu star (bias corrected)	196
MLE Mean (bias corrected)	198	MLE Sd (bias corrected)	213.5

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.302	nu hat (KM)	221.4
Approximate Chi Square Value (221.37, α)	187.9	Adjusted Chi Square Value (221.37, β)	187.8
95% Gamma Approximate KM-UCL (use when n>=50)	149.4	95% Gamma Adjusted KM-UCL (use when n<50)	149.5

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	83.41
Maximum	3140	Median	32.97

SD	211.3	CV	2.533
k hat (MLE)	0.357	k star (bias corrected MLE)	0.356
Theta hat (MLE)	233.5	Theta star (bias corrected MLE)	234.2
nu hat (MLE)	261.5	nu star (bias corrected)	260.7
MLE Mean (bias corrected)	83.41	MLE Sd (bias corrected)	139.8
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (260.66, α)	224.3	Adjusted Chi Square Value (260.66, β)	224.1
95% Gamma Approximate UCL (use when n>=50)	96.94	95% Gamma Adjusted UCL (use when n<50)	96.99
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0482	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.083	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	108.1	Mean in Log Scale	4.305
SD in Original Scale	204.6	SD in Log Scale	0.703
95% t UCL (assumes normality of ROS data)	125.7	95% Percentile Bootstrap UCL	127.6
95% BCA Bootstrap UCL	132.8	95% Bootstrap t UCL	137.9
95% H-UCL (Log ROS)	101.7		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	4.277	95% H-UCL (KM -Log)	127.1
KM SD (logged)	0.962	95% Critical H Value (KM-Log)	2.096
KM Standard Error of Mean (logged)	0.0782		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	717.6	Mean in Log Scale	5.508
SD in Original Scale	1209	SD in Log Scale	145.80%
95% t UCL (Assumes normality)	821.9	95% H-Stat UCL	867.5
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	152		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***phosphorus***7723-14-0***t***mg/kg)			
General Statistics			
Total Number of Observations	349	Number of Distinct Observations	92
		Number of Missing Observations	0
Minimum	113.6	Mean	1722
Maximum	11000	Median	1600
SD	1006	Std. Error of Mean	53.85
Coefficient of Variation	0.584	Skewness	3.443
Normal GOF Test			
Shapiro Wilk Test Statistic	0.802	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.141	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0474	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1811	95% Adjusted-CLT UCL (Chen-1995)	1821
		95% Modified-t UCL (Johnson-1978)	1812
Gamma GOF Test			
A-D Test Statistic	4.435	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.103	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.049	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.547	k star (bias corrected MLE)	3.518
Theta hat (MLE)	485.5	Theta star (bias corrected MLE)	489.4
nu hat (MLE)	2476	nu star (bias corrected)	2456
MLE Mean (bias corrected)	1722	MLE Sd (bias corrected)	918
		Approximate Chi Square Value (0.05)	2342
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2341

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1806	95% Adjusted Gamma UCL (use when n<50)	1806
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.93	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.136	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0474	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.733	Mean of logged Data	7.304
Maximum of Logged Data	9.306	SD of logged Data	0.58
Assuming Lognormal Distribution			
95% H-UCL	1861	90% Chebyshev (MVUE) UCL	1933
95% Chebyshev (MVUE) UCL	2013	97.5% Chebyshev (MVUE) UCL	2124
99% Chebyshev (MVUE) UCL	2342		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1811	95% Jackknife UCL	1811
95% Standard Bootstrap UCL	1812	95% Bootstrap-t UCL	1826
95% Hall's Bootstrap UCL	1832	95% Percentile Bootstrap UCL	1814
95% BCA Bootstrap UCL	1827		
90% Chebyshev(Mean, Sd) UCL	1884	95% Chebyshev(Mean, Sd) UCL	1957
97.5% Chebyshev(Mean, Sd) UCL	2058	99% Chebyshev(Mean, Sd) UCL	2258
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1957		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***phosphorus***7723-14-0***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	349	Number of Distinct Observations	340
		Number of Missing Observations	0
Minimum	11.45	Mean	246.1
Maximum	1070	Median	200.2
SD	165.8	Std. Error of Mean	8.875
Coefficient of Variation	0.674	Skewness	1.522
Normal GOF Test			
Shapiro Wilk Test Statistic	0.874	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.12	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0474	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	260.7	95% Adjusted-CLT UCL (Chen-1995)	261.4
		95% Modified-t UCL (Johnson-1978)	260.8
Gamma GOF Test			
A-D Test Statistic	1.215	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.763	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0473	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0492	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.408	k star (bias corrected MLE)	2.389
Theta hat (MLE)	102.2	Theta star (bias corrected MLE)	103
nu hat (MLE)	1681	nu star (bias corrected)	1668
MLE Mean (bias corrected)	246.1	MLE Sd (bias corrected)	159.2
		Approximate Chi Square Value (0.05)	1574
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1573
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	260.7	95% Adjusted Gamma UCL (use when n<50)	260.8
Lognormal GOF Test			

Shapiro Wilk Test Statistic	0.968	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.00E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0505	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0474	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.438	Mean of logged Data	5.284
Maximum of Logged Data	6.976	SD of logged Data	0.706
Assuming Lognormal Distribution			
95% H-UCL	271.8	90% Chebyshev (MVUE) UCL	284.5
95% Chebyshev (MVUE) UCL	299	97.5% Chebyshev (MVUE) UCL	319
99% Chebyshev (MVUE) UCL	358.4		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	260.7	95% Jackknife UCL	260.7
95% Standard Bootstrap UCL	260.4	95% Bootstrap-t UCL	261.4
95% Hall's Bootstrap UCL	261.7	95% Percentile Bootstrap UCL	260.9
95% BCA Bootstrap UCL	261.8		
90% Chebyshev(Mean, Sd) UCL	272.7	95% Chebyshev(Mean, Sd) UCL	284.8
97.5% Chebyshev(Mean, Sd) UCL	301.5	99% Chebyshev(Mean, Sd) UCL	334.4
Suggested UCL to Use			
95% Approximate Gamma UCL	260.7		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***potassium*** 7440-09-7***t***mg/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	241
		Number of Missing Observations	0
Minimum	319	Mean	2838
Maximum	6680	Median	3070
SD	1020	Std. Error of Mean	53.31
Coefficient of Variation	0.359	Skewness	-0.26
Normal GOF Test			
Shapiro Wilk Test Statistic	0.969	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	1.31E-04	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0928	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2926	95% Adjusted-CLT UCL (Chen-1995)	2925
		95% Modified-t UCL (Johnson-1978)	#####
Gamma GOF Test			
A-D Test Statistic	9.356	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.757	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.132	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	5.689	k star (bias corrected MLE)	5.645
Theta hat (MLE)	498.8	Theta star (bias corrected MLE)	502.7
nu hat (MLE)	4165	nu star (bias corrected)	4132
MLE Mean (bias corrected)	2838	MLE Sd (bias corrected)	1194
		Approximate Chi Square Value (0.05)	3984
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	3983
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	2944	95% Adjusted Gamma UCL (use when n<50)	2944
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.854	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.145	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	5.765	Mean of logged Data	7.86
Maximum of Logged Data	8.807	SD of logged Data	0.478
Assuming Lognormal Distribution			
95% H-UCL	3040	90% Chebyshev (MVUE) UCL	3136
95% Chebyshev (MVUE) UCL	3240	97.5% Chebyshev (MVUE) UCL	3384
99% Chebyshev (MVUE) UCL	3668		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2926	95% Jackknife UCL	2926
95% Standard Bootstrap UCL	2925	95% Bootstrap-t UCL	2927
95% Hall's Bootstrap UCL	2923	95% Percentile Bootstrap UCL	2924
95% BCA Bootstrap UCL	2933		
90% Chebyshev(Mean, Sd) UCL	2998	95% Chebyshev(Mean, Sd) UCL	3070
97.5% Chebyshev(Mean, Sd) UCL	3171	99% Chebyshev(Mean, Sd) UCL	3368
Suggested UCL to Use			
95% Student's-t UCL	2926	or 95% Modified-t UCL	2926
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
Note: For highly negatively-skewed data, confidence limits (e.g., Chen, Johnson, Lognormal, and Gamma) may not be reliable. Chen's and Johnson's methods provide adjustments for positively skewed data sets.			
RESULT_VALUE (studyarea***potassium*** 7440-09-7***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
		Number of Missing Observations	0
Minimum	59.47	Mean	439
Maximum	1730	Median	360.9
SD	301	Std. Error of Mean	15.73
Coefficient of Variation	0.686	Skewness	1.026
Normal GOF Test			
Shapiro Wilk Test Statistic	0.893	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.114	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	464.9	95% Adjusted-CLT UCL (Chen-1995)	465.7
		95% Modified-t UCL (Johnson-1978)	465
Gamma GOF Test			
A-D Test Statistic	2.602	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.765	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0641	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0481	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.2	k star (bias corrected MLE)	2.184
Theta hat (MLE)	199.5	Theta star (bias corrected MLE)	201
nu hat (MLE)	1610	nu star (bias corrected)	1599
MLE Mean (bias corrected)	439	MLE Sd (bias corrected)	297
		Approximate Chi Square Value (0.05)	1507
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1506
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	465.7	95% Adjusted Gamma UCL (use when n<50)	465.8
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.959	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.82E-09	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0603	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			

Minimum of Logged Data	4.086	Mean of logged Data	5.84
Maximum of Logged Data	7.456	SD of logged Data	0.724
Assuming Lognormal Distribution			
95% H-UCL	480.7	90% Chebyshev (MVUE) UCL	503.3
95% Chebyshev (MVUE) UCL	529	97.5% Chebyshev (MVUE) UCL	564.7
99% Chebyshev (MVUE) UCL	634.8		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	464.8	95% Jackknife UCL	464.9
95% Standard Bootstrap UCL	464.6	95% Bootstrap-t UCL	465
95% Hall's Bootstrap UCL	465.9	95% Percentile Bootstrap UCL	463.8
95% BCA Bootstrap UCL	463.3		
90% Chebyshev(Mean, Sd) UCL	486.2	95% Chebyshev(Mean, Sd) UCL	507.5
97.5% Chebyshev(Mean, Sd) UCL	537.2	99% Chebyshev(Mean, Sd) UCL	595.5
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	507.5		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***pyrene***129-00-0***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
		Number of Missing Observations	0
Minimum	0.111	Mean	1.27
Maximum	10.22	Median	0.942
SD	1.135	Std. Error of Mean	0.0593
Coefficient of Variation	0.894	Skewness	3.661
Normal GOF Test			
Shapiro Wilk Test Statistic	0.658	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.203	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.368	95% Adjusted-CLT UCL (Chen-1995)	1.38
		95% Modified-t UCL (Johnson-1978)	1.37
Gamma GOF Test			
A-D Test Statistic	10.1	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.764	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.136	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.048	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.344	k star (bias corrected MLE)	2.327
Theta hat (MLE)	0.542	Theta star (bias corrected MLE)	0.546
nu hat (MLE)	1716	nu star (bias corrected)	1703
MLE Mean (bias corrected)	1.27	MLE Sd (bias corrected)	0.833
		Approximate Chi Square Value (0.05)	1608
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1608
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1.345	95% Adjusted Gamma UCL (use when n<50)	1.345
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.965	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	6.23E-06	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0861	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.201	Mean of logged Data	0.0109
Maximum of Logged Data	2.324	SD of logged Data	0.627
Assuming Lognormal Distribution			
95% H-UCL	1.309	90% Chebyshev (MVUE) UCL	1.362

95% Chebyshev (MVUE) UCL	1.422	97.5% Chebyshev (MVUE) UCL	1.505
99% Chebyshev (MVUE) UCL	1.668		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1.368	95% Jackknife UCL	1.368
95% Standard Bootstrap UCL	1.369	95% Bootstrap-t UCL	1.375
95% Hall's Bootstrap UCL	1.379	95% Percentile Bootstrap UCL	1.371
95% BCA Bootstrap UCL	1.376		
90% Chebyshev(Mean, Sd) UCL	1.448	95% Chebyshev(Mean, Sd) UCL	1.529
97.5% Chebyshev(Mean, Sd) UCL	1.641	99% Chebyshev(Mean, Sd) UCL	1.861
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1.529		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***pyrene***129-00-0***t***ug/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	290
		Number of Missing Observations	0
Minimum	308	Mean	11974
Maximum	138000	Median	7935
SD	15093	Std. Error of Mean	788.9
Coefficient of Variation	1.26	Skewness	4.199
Normal GOF Test			
Shapiro Wilk Test Statistic	0.607	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.226	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	13275	95% Adjusted-CLT UCL (Chen-1995)	13457
		95% Modified-t UCL (Johnson-1978)	13304
Gamma GOF Test			
A-D Test Statistic	5.361	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.778	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0869	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0487	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.254	k star (bias corrected MLE)	1.245
Theta hat (MLE)	9550	Theta star (bias corrected MLE)	9615
nu hat (MLE)	917.9	nu star (bias corrected)	911.7
MLE Mean (bias corrected)	11974	MLE Sd (bias corrected)	10730
		Approximate Chi Square Value (0.05)	842.6
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	842.3
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	12956	95% Adjusted Gamma UCL (use when n<50)	12960
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.988	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.823	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0263	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	5.73	Mean of logged Data	8.941
Maximum of Logged Data	11.84	SD of logged Data	0.927
Assuming Lognormal Distribution			
95% H-UCL	12981	90% Chebyshev (MVUE) UCL	13748
95% Chebyshev (MVUE) UCL	14666	97.5% Chebyshev (MVUE) UCL	15940
99% Chebyshev (MVUE) UCL	18443		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			

Nonparametric Distribution Free UCLs			
95% CLT UCL	13272	95% Jackknife UCL	13275
95% Standard Bootstrap UCL	13244	95% Bootstrap-t UCL	13423
95% Hall's Bootstrap UCL	13579	95% Percentile Bootstrap UCL	13347
95% BCA Bootstrap UCL	13519		
90% Chebyshev(Mean, Sd) UCL	14341	95% Chebyshev(Mean, Sd) UCL	15413
97.5% Chebyshev(Mean, Sd) UCL	16901	99% Chebyshev(Mean, Sd) UCL	19824
Suggested UCL to Use			
95% H-UCL	12981		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

RESULT_VALUE (studyarea***retene***483-65-8***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	300	Number of Distinct Observations	297
Number of Detects	130	Number of Non-Detects	170
Number of Distinct Detects	130	Number of Distinct Non-Detects	167
Minimum Detect	0.019	Minimum Non-Detect	0.00137
Maximum Detect	1.795	Maximum Non-Detect	0.042
Variance Detects	0.0506	Percent Non-Detects	56.67%
Mean Detects	0.143	SD Detects	0.225
Median Detects	0.0641	CV Detects	1.577
Skewness Detects	4.53	Kurtosis Detects	25.93
Mean of Logged Detects	-2.463	SD of Logged Detects	0.878

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.513	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.291	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0777	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0626	Standard Error of Mean	0.00946
SD	0.163	95% KM (BCA) UCL	0.0799
95% KM (t) UCL	0.0782	95% KM (Percentile Bootstrap) UCL	0.0795
95% KM (z) UCL	0.0782	95% KM Bootstrap t UCL	0.0836
90% KM Chebyshev UCL	0.091	95% KM Chebyshev UCL	0.104
97.5% KM Chebyshev UCL	0.122	99% KM Chebyshev UCL	0.157

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	9.711 Anderson-Darling GOF Test
5% A-D Critical Value	0.78 Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.235 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.084 Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.106	k star (bias corrected MLE)	1.086
Theta hat (MLE)	0.129	Theta star (bias corrected MLE)	0.131
nu hat (MLE)	287.6	nu star (bias corrected)	282.3
MLE Mean (bias corrected)	0.143	MLE Sd (bias corrected)	0.137

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.147	nu hat (KM)	88.23
Approximate Chi Square Value (88.23, α)	67.58	Adjusted Chi Square Value (88.23, β)	67.49
95% Gamma Approximate KM-UCL (use when n>=50)	0.0818	95% Gamma Adjusted KM-UCL (use when n<50)	0.0819

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	0.0675
Maximum	1.795	Median	1.00%
SD	0.162	CV	2.397
k hat (MLE)	0.626	k star (bias corrected MLE)	0.622
Theta hat (MLE)	0.108	Theta star (bias corrected MLE)	0.109
nu hat (MLE)	375.5	nu star (bias corrected)	373.1
MLE Mean (bias corrected)	0.0675	MLE Sd (bias corrected)	0.0856

	Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (373.11, α)	329.3 Adjusted Chi Square Value (373.11, β)	329.1
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0765 95% Gamma Adjusted UCL (use when $n < 50$)	0.0765
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.191 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0667 Mean in Log Scale	-3.766
SD in Original Scale	0.162 SD in Log Scale	1.28
95% t UCL (assumes normality of ROS data)	0.0821 95% Percentile Bootstrap UCL	0.0829
95% BCA Bootstrap UCL	0.0866 95% Bootstrap t UCL	0.0892
95% H-UCL (Log ROS)	0.0627	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.0639 Mean in Log Scale	-4.338
SD in Original Scale	0.163 SD in Log Scale	1.788
95% t UCL (Assumes normality)	0.0794 95% H-Stat UCL	0.0873
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (t) UCL	0.0782 95% KM (% Bootstrap) UCL	0.0795
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***retene***483-65-8***t***ug/kg)		
General Statistics		
Total Number of Observations	300 Number of Distinct Observations	270
Number of Detects	130 Number of Non-Detects	170
Number of Distinct Detects	116 Number of Distinct Non-Detects	156
Minimum Detect	16 Minimum Non-Detect	1.44
Maximum Detect	20100 Maximum Non-Detect	407
Variance Detects	8066417 Percent Non-Detects	56.67%
Mean Detects	1357 SD Detects	2840
Median Detects	467.5 CV Detects	2.093
Skewness Detects	4.5 Kurtosis Detects	23.06
Mean of Logged Detects	6.29 SD of Logged Detects	1.231
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.461 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.318 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	590.8 Standard Error of Mean	114.7
SD	1979 95% KM (BCA) UCL	786.8
95% KM (t) UCL	780.1 95% KM (Percentile Bootstrap) UCL	783
95% KM (z) UCL	779.5 95% KM Bootstrap t UCL	860
90% KM Chebyshev UCL	935 95% KM Chebyshev UCL	1091
97.5% KM Chebyshev UCL	1307 99% KM Chebyshev UCL	1732
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	7.868 Anderson-Darling GOF Test	
5% A-D Critical Value	0.804 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.165 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0855 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.66 k star (bias corrected MLE)	0.65
Theta hat (MLE)	2056 Theta star (bias corrected MLE)	2088
nu hat (MLE)	171.7 nu star (bias corrected)	169
MLE Mean (bias corrected)	1357 MLE Sd (bias corrected)	1683
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0891 nu hat (KM)	53.46
Approximate Chi Square Value (53.46, α)	37.66 Adjusted Chi Square Value (53.46, β)	37.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	838.7 95% Gamma Adjusted KM-UCL (use when $n < 50$)	840.1
Gamma (KM) may not be used when k hat (KM) is < 0.1		

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	1.00E-02	Mean #####
Maximum	20100	Median 0.01
SD	1983	CV 3.373
k hat (MLE)	0.126	k star (bias corrected MLE) 0.127
Theta hat (MLE)	4673	Theta star (bias corrected MLE) 4637
nu hat (MLE)	75.51	nu star (bias corrected) 76.09
MLE Mean (bias corrected)	588.1	MLE Sd (bias corrected) 1651
		Adjusted Level of Significance (β) 0.0492
Approximate Chi Square Value (76.09, α)	57	Adjusted Chi Square Value (76.09, β) 56.92
95% Gamma Approximate UCL (use when n>=50)	785.1	95% Gamma Adjusted UCL (use when n<50) 786.2
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.113	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0777	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	601.1	Mean in Log Scale 4.482
SD in Original Scale	1980	SD in Log Scale 1.791
95% t UCL (assumes normality of ROS data)	789.7	95% Percentile Bootstrap UCL 791.3
95% BCA Bootstrap UCL	865.7	95% Bootstrap t UCL 888.8
95% H-UCL (Log ROS)	594.1	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	607.4	Mean in Log Scale 4.564
SD in Original Scale	1978	SD in Log Scale 1.82
95% t UCL (Assumes normality)	795.8	95% H-Stat UCL 684.5
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	786.8	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***selenium***7782-49-2***t***mg/kg)		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 273
Number of Detects	351	Number of Non-Detects 15
Number of Distinct Detects	259	Number of Distinct Non-Detects 14
Minimum Detect	0.717	Minimum Non-Detect 0.309
Maximum Detect	52.6	Maximum Non-Detect 1.51
Variance Detects	21.07	Percent Non-Detects 4.10%
Mean Detects	3.982	SD Detects 4.59
Median Detects	2.78	CV Detects 1.153
Skewness Detects	6.027	Kurtosis Detects 49.64
Mean of Logged Detects	1.109	SD of Logged Detects 0.661
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.522	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.248	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0473	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	3.841	Standard Error of Mean 0.238
SD	4.541	95% KM (BCA) UCL 4.272
95% KM (t) UCL	4.233	95% KM (Percentile Bootstrap) UCL 4.233
95% KM (z) UCL	4.232	95% KM Bootstrap t UCL 4.36
90% KM Chebyshev UCL	4.554	95% KM Chebyshev UCL 4.877
97.5% KM Chebyshev UCL	5.325	99% KM Chebyshev UCL 6.206
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	9.888	Anderson-Darling GOF Test
5% A-D Critical Value	0.766	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.122	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0492	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.984 k star (bias corrected MLE)	1.969
Theta hat (MLE)	2.007 Theta star (bias corrected MLE)	2.023
nu hat (MLE)	1393 nu star (bias corrected)	1382
MLE Mean (bias corrected)	3.982 MLE Sd (bias corrected)	2.838

Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.715 nu hat (KM)	523.7
Approximate Chi Square Value (523.66, α)	471.6 Adjusted Chi Square Value (523.66, β)	471.4
95% Gamma Approximate KM-UCL (use when n>=50)	4.265 95% Gamma Adjusted KM-UCL (use when n<50)	4.267

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	381.90%
Maximum	52.6 Median	2.74
SD	4.563 CV	1.195
k hat (MLE)	1.214 k star (bias corrected MLE)	1.206
Theta hat (MLE)	3.145 Theta star (bias corrected MLE)	3.166
nu hat (MLE)	889 nu star (bias corrected)	883
MLE Mean (bias corrected)	3.819 MLE Sd (bias corrected)	3.478
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (883.02, α)	815.1 Adjusted Chi Square Value (883.02, β)	814.8
95% Gamma Approximate UCL (use when n>=50)	4.138 95% Gamma Adjusted UCL (use when n<50)	4.139

Lognormal GOF Test on Detected Observations Only	
Lilliefors Test Statistic	0.0571 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0473 Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level	

Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	3.848 Mean in Log Scale	1.049
SD in Original Scale	4.541 SD in Log Scale	0.711
95% t UCL (assumes normality of ROS data)	4.24 95% Percentile Bootstrap UCL	4.282
95% BCA Bootstrap UCL	4.317 95% Bootstrap t UCL	4.348
95% H-UCL (Log ROS)	3.947	

DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	3.836 Mean in Log Scale	1.022
SD in Original Scale	4.55 SD in Log Scale	0.781
95% t UCL (Assumes normality)	4.228 95% H-Stat UCL	4.084
DL/2 is not a recommended method, provided for comparisons and historical reasons		

Nonparametric Distribution Free UCL Statistics	
Data do not follow a Discernible Distribution at 5% Significance Level	

Suggested UCL to Use	
95% KM (BCA) UCL	4.272

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***selenium***7782-49-2***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	366 Number of Distinct Observations	361
Number of Detects	351 Number of Non-Detects	15
Number of Distinct Detects	346 Number of Distinct Non-Detects	15
Minimum Detect	0.0684 Minimum Non-Detect	0.0934
Maximum Detect	5.122 Maximum Non-Detect	1.673
Variance Detects	0.203 Percent Non-Detects	4.10%
Mean Detects	0.474 SD Detects	0.451
Median Detects	0.401 CV Detects	0.95
Skewness Detects	6.401 Kurtosis Detects	56.34
Mean of Logged Detects	-0.956 SD of Logged Detects	0.614

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.545 Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.203 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0473 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

Mean	0.463	Standard Error of Mean	0.0233
SD	0.445	95% KM (BCA) UCL	0.503
95% KM (t) UCL	0.501	95% KM (Percentile Bootstrap) UCL	0.505
95% KM (z) UCL	0.501	95% KM Bootstrap t UCL	0.518
90% KM Chebyshev UCL	0.533	95% KM Chebyshev UCL	0.564
97.5% KM Chebyshev UCL	0.608	99% KM Chebyshev UCL	0.695

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	4.256	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0876	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.049	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	2.536	k star (bias corrected MLE)	2.516
Theta hat (MLE)	0.187	Theta star (bias corrected MLE)	0.189
nu hat (MLE)	1780	nu star (bias corrected)	1766
MLE Mean (bias corrected)	0.474	MLE Sd (bias corrected)	0.299

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	1.081	nu hat (KM)	791.2
Approximate Chi Square Value (791.16, α)	726.9	Adjusted Chi Square Value (791.16, β)	726.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.504	95% Gamma Adjusted KM-UCL (use when n<50)	0.504

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	46.00%
Maximum	5.122	Median	0.394
SD	0.448	CV	0.974
k hat (MLE)	2.096	k star (bias corrected MLE)	2.081
Theta hat (MLE)	0.219	Theta star (bias corrected MLE)	0.221
nu hat (MLE)	1534	nu star (bias corrected)	1523
MLE Mean (bias corrected)	0.46	MLE Sd (bias corrected)	0.319
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1433	Adjusted Chi Square Value (N/A, β)	1433
95% Gamma Approximate UCL (use when n>=50)	0.488	95% Gamma Adjusted UCL (use when n<50)	0.488

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0483	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0473	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.463	Mean in Log Scale	-0.988
SD in Original Scale	0.445	SD in Log Scale	0.627
95% t UCL (assumes normality of ROS data)	0.501	95% Percentile Bootstrap UCL	0.505
95% BCA Bootstrap UCL	0.513	95% Bootstrap t UCL	0.516
95% H-UCL (Log ROS)	0.482		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.462	Mean in Log Scale	-1
SD in Original Scale	0.447	SD in Log Scale	0.655
95% t UCL (Assumes normality)	0.501	95% H-Stat UCL	0.486
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (BCA) UCL	0.503
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***silver***7440-22-4***t***mg/kg)

General Statistics

Total Number of Observations	366	Number of Distinct Observations	303
		Number of Missing Observations	0
Minimum	0.214	Mean	8.328
Maximum	52.4	Median	5.315
SD	7.741	Std. Error of Mean	0.405
Coefficient of Variation	0.929	Skewness	2.107

Normal GOF Test		
Shapiro Wilk Test Statistic	0.775	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.185	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	8.995	95% Adjusted-CLT UCL (Chen-1995)
		95% Modified-t UCL (Johnson-1978)
		9.041
		9.003
Gamma GOF Test		
A-D Test Statistic	6.29	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.772	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.105	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0484	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	1.574	k star (bias corrected MLE)
Theta hat (MLE)	5.29	Theta star (bias corrected MLE)
nu hat (MLE)	1152	nu star (bias corrected)
MLE Mean (bias corrected)	8.328	MLE Sd (bias corrected)
		Approximate Chi Square Value (0.05)
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value
		1067
		1066
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	8.934	95% Adjusted Gamma UCL (use when n<50)
		8.936
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.977	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0.0463	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0564	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	-1.542	Mean of logged Data
Maximum of Logged Data	3.959	SD of logged Data
		1.77
		0.842
Assuming Lognormal Distribution		
95% H-UCL	9.14	90% Chebyshev (MVUE) UCL
95% Chebyshev (MVUE) UCL	10.21	97.5% Chebyshev (MVUE) UCL
99% Chebyshev (MVUE) UCL	12.6	
		9.635
		11.02
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution (0.05)		
Nonparametric Distribution Free UCLs		
95% CLT UCL	8.994	95% Jackknife UCL
95% Standard Bootstrap UCL	8.991	95% Bootstrap-t UCL
95% Hall's Bootstrap UCL	9.077	95% Percentile Bootstrap UCL
95% BCA Bootstrap UCL	9.091	
90% Chebyshev(Mean, Sd) UCL	9.542	95% Chebyshev(Mean, Sd) UCL
97.5% Chebyshev(Mean, Sd) UCL	10.86	99% Chebyshev(Mean, Sd) UCL
		10.09
		12.35
Suggested UCL to Use		
95% Chebyshev (Mean, Sd) UCL	10.09	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***silver***7440-22-4***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	366	Number of Distinct Observations
		Number of Missing Observations
		0
Minimum	0.0393	Mean
Maximum	4.479	Median
SD	0.694	Std. Error of Mean
Coefficient of Variation	0.695	Skewness
		0.999
		0.83
		0.0363
		1.473
Normal GOF Test		
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.124	Lilliefors GOF Test

5% Lilliefors Critical Value		0.0463 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.059	95% Adjusted-CLT UCL (Chen-1995)	1.062
		95% Modified-t UCL (Johnson-1978)	1.06
Gamma GOF Test			
A-D Test Statistic	0.658	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.765	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.046	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0481	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.139	k star (bias corrected MLE)	2.124
Theta hat (MLE)	0.467	Theta star (bias corrected MLE)	0.471
nu hat (MLE)	1566	nu star (bias corrected)	1555
MLE Mean (bias corrected)	0.999	MLE Sd (bias corrected)	0.686
		Approximate Chi Square Value (0.05)	1464
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1464
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	1.061	95% Adjusted Gamma UCL (use when n<50)	1.062
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.963	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	4.76E-07	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0897	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-3.237	Mean of logged Data	-0.252
Maximum of Logged Data	1.499	SD of logged Data	0.766
Assuming Lognormal Distribution			
95% H-UCL	1.127	90% Chebyshev (MVUE) UCL	1.183
95% Chebyshev (MVUE) UCL	1.248	97.5% Chebyshev (MVUE) UCL	1.337
99% Chebyshev (MVUE) UCL	1.512		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1.059	95% Jackknife UCL	1.059
95% Standard Bootstrap UCL	1.059	95% Bootstrap-t UCL	1.062
95% Hall's Bootstrap UCL	1.063	95% Percentile Bootstrap UCL	1.06
95% BCA Bootstrap UCL	1.059		
90% Chebyshev(Mean, Sd) UCL	1.108	95% Chebyshev(Mean, Sd) UCL	1.158
97.5% Chebyshev(Mean, Sd) UCL	1.226	99% Chebyshev(Mean, Sd) UCL	1.361
Suggested UCL to Use			
95% Approximate Gamma UCL	1.061		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***sodium***7440-23-5***t***mg/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	231
		Number of Missing Observations	0
Minimum	1720	Mean	18491
Maximum	62700	Median	17850
SD	8022	Std. Error of Mean	419.3
Coefficient of Variation	0.434	Skewness	1.012
Normal GOF Test			
Shapiro Wilk Test Statistic	0.949	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	6.22E-15	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0882	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	

95% Student's-t UCL	19183	95% Adjusted-CLT UCL (Chen-1995) 95% Modified-t UCL (Johnson-1978)	19205 19186
Gamma GOF Test			
A-D Test Statistic	5.101	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.758	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0951	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.56	k star (bias corrected MLE)	4.525
Theta hat (MLE)	4055	Theta star (bias corrected MLE)	4087
nu hat (MLE)	3338	nu star (bias corrected)	3312
MLE Mean (bias corrected)	18491	MLE Sd (bias corrected)	8693
		Approximate Chi Square Value (0.05)	3179
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	3179
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	19263	95% Adjusted Gamma UCL (use when n<50)	19266
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.875	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.132	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	7.45	Mean of logged Data	9.711
Maximum of Logged Data	11.05	SD of logged Data	0.534
Assuming Lognormal Distribution			
95% H-UCL	20027	90% Chebyshev (MVUE) UCL	20731
95% Chebyshev (MVUE) UCL	21502	97.5% Chebyshev (MVUE) UCL	22572
99% Chebyshev (MVUE) UCL	24674		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	19181	95% Jackknife UCL	19183
95% Standard Bootstrap UCL	1.92E+04	95% Bootstrap-t UCL	19203
95% Hall's Bootstrap UCL	19230	95% Percentile Bootstrap UCL	19194
95% BCA Bootstrap UCL	19207		
90% Chebyshev(Mean, Sd) UCL	19749	95% Chebyshev(Mean, Sd) UCL	20319
97.5% Chebyshev(Mean, Sd) UCL	21110	99% Chebyshev(Mean, Sd) UCL	22663
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	20319		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***sodium***7440-23-5***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	365
		Number of Missing Observations	0
Minimum	104.6	Mean	2552
Maximum	10487	Median	2381
SD	1347	Std. Error of Mean	70.38
Coefficient of Variation	0.528	Skewness	1
Normal GOF Test			
Shapiro Wilk Test Statistic	0.947	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	6.66E-16	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0698	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2668	95% Adjusted-CLT UCL (Chen-1995) 95% Modified-t UCL (Johnson-1978)	2672 2669
Gamma GOF Test			
A-D Test Statistic	0.75	Anderson-Darling Gamma GOF Test	

5% A-D Critical Value	0.759	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0412	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0478	Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level		

Gamma Statistics		
k hat (MLE)	3.421	k star (bias corrected MLE) 3.395
Theta hat (MLE)	746	Theta star (bias corrected MLE) 751.8
nu hat (MLE)	2504	nu star (bias corrected) 2485
MLE Mean (bias corrected)	2552	MLE Sd (bias corrected) 1385
		Approximate Chi Square Value (0.05) 2370
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value 2370

Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50)	2676	95% Adjusted Gamma UCL (use when n<50) 2676

Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.965	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	6.25E-06	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0648	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		

Lognormal Statistics		
Minimum of Logged Data	4.65	Mean of logged Data 7.691
Maximum of Logged Data	9.258	SD of logged Data 0.593

Assuming Lognormal Distribution		
95% H-UCL	2765	90% Chebyshev (MVUE) UCL 2872
95% Chebyshev (MVUE) UCL	2991	97.5% Chebyshev (MVUE) UCL 3156
99% Chebyshev (MVUE) UCL	3481	

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs		
95% CLT UCL	2668	95% Jackknife UCL 2668
95% Standard Bootstrap UCL	2669	95% Bootstrap-t UCL 2678
95% Hall's Bootstrap UCL	2676	95% Percentile Bootstrap UCL 2663
95% BCA Bootstrap UCL	2676	
90% Chebyshev(Mean, Sd) UCL	2763	95% Chebyshev(Mean, Sd) UCL 2859
97.5% Chebyshev(Mean, Sd) UCL	2992	99% Chebyshev(Mean, Sd) UCL 3252

Suggested UCL to Use	
95% Approximate Gamma UCL	2676

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***soot carbon***sootc***t***mg/kg (at 1% toc))

General Statistics		
Total Number of Observations	31	Number of Distinct Observations 31
		Number of Missing Observations 0
Minimum	369.8	Mean 791.4
Maximum	1930	Median 730.8
SD	312.8	Std. Error of Mean 56.19
Coefficient of Variation	0.395	Skewness 2.02

Normal GOF Test		
Shapiro Wilk Test Statistic	0.819	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.929	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.212	Lilliefors GOF Test
5% Lilliefors Critical Value	0.159	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		

Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	886.8	95% Adjusted-CLT UCL (Chen-1995) 905.7
		95% Modified-t UCL (Johnson-1978) 890.2

Gamma GOF Test		
A-D Test Statistic	0.859	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.746	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.16	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.158	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics		
k hat (MLE)	8.356 k star (bias corrected MLE)	7.569
Theta hat (MLE)	94.71 Theta star (bias corrected MLE)	104.6
nu hat (MLE)	518.1 nu star (bias corrected)	469.3
MLE Mean (bias corrected)	791.4 MLE Sd (bias corrected)	287.7
	Approximate Chi Square Value (0.05)	420.1
Adjusted Level of Significance	0.0413 Adjusted Chi Square Value	417.5
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50))	884.2 95% Adjusted Gamma UCL (use when n<50)	889.7
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.952 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.929 Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.137 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.159 Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	5.913 Mean of logged Data	6.613
Maximum of Logged Data	7.565 SD of logged Data	0.344
Assuming Lognormal Distribution		
95% H-UCL	885.4 90% Chebyshev (MVUE) UCL	937.4
95% Chebyshev (MVUE) UCL	1005 97.5% Chebyshev (MVUE) UCL	1099
99% Chebyshev (MVUE) UCL	1283	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	883.9 95% Jackknife UCL	886.8
95% Standard Bootstrap UCL	885.2 95% Bootstrap-t UCL	922.6
95% Hall's Bootstrap UCL	974.6 95% Percentile Bootstrap UCL	885.5
95% BCA Bootstrap UCL	911.9	
90% Chebyshev(Mean, Sd) UCL	960 95% Chebyshev(Mean, Sd) UCL	1036
97.5% Chebyshev(Mean, Sd) UCL	1142 99% Chebyshev(Mean, Sd) UCL	1350
Suggested UCL to Use		
95% Student's-t UCL	886.8 or 95% Modified-t UCL	890.2
or 95% H-UCL	885.4	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.		
RESULT_VALUE (studyarea***sulfide***18496-25-8***t***mg/kg)		
General Statistics		
Total Number of Observations	382 Number of Distinct Observations	143
	Number of Missing Observations	0
Minimum	180 Mean	6990
Maximum	24000 Median	6000
SD	4595 Std. Error of Mean	235.1
Coefficient of Variation	0.657 Skewness	0.968
Normal GOF Test		
Shapiro Wilk Test Statistic	0.92 Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.00E+00 Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0977 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0453 Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL	95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	7378 95% Adjusted-CLT UCL (Chen-1995)	7389
	95% Modified-t UCL (Johnson-1978)	7380
Gamma GOF Test		
A-D Test Statistic	0.604 Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.766 Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0344 Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.047 Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level		

Gamma Statistics		
k hat (MLE)	2.038	k star (bias corrected MLE) 2.024
Theta hat (MLE)	3430	Theta star (bias corrected MLE) 3454
nu hat (MLE)	1557	nu star (bias corrected) 1546
MLE Mean (bias corrected)	6990	MLE Sd (bias corrected) 4913
		Approximate Chi Square Value (0.05) 1456
Adjusted Level of Significance	0.0494	Adjusted Chi Square Value 1456
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50)	7424	95% Adjusted Gamma UCL (use when n<50) 7425
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.926	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.07	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0453	Data Not Lognormal at 5% Significance Level
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	5.193	Mean of logged Data 8.587
Maximum of Logged Data	10.09	SD of logged Data 0.826
Assuming Lognormal Distribution		
95% H-UCL	8205	90% Chebyshev (MVUE) UCL 8633
95% Chebyshev (MVUE) UCL	9132	97.5% Chebyshev (MVUE) UCL 9824
99% Chebyshev (MVUE) UCL	11184	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	7377	95% Jackknife UCL 7378
95% Standard Bootstrap UCL	7367	95% Bootstrap-t UCL 7397
95% Hall's Bootstrap UCL	7380	95% Percentile Bootstrap UCL 7370
95% BCA Bootstrap UCL	7385	
90% Chebyshev(Mean, Sd) UCL	7695	95% Chebyshev(Mean, Sd) UCL 8015
97.5% Chebyshev(Mean, Sd) UCL	8458	99% Chebyshev(Mean, Sd) UCL 9329
Suggested UCL to Use		
95% Approximate Gamma UCL	7424	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***sulfide***18496-25-8***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	382	Number of Distinct Observations 378
		Number of Missing Observations 0
Minimum	34.88	Mean 864.8
Maximum	12745	Median 787.8
SD	747.8	Std. Error of Mean 38.26
Coefficient of Variation	0.865	Skewness 10.72
Normal GOF Test		
Shapiro Wilk Test Statistic	0.532	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.161	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0453	Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level		
Assuming Normal Distribution		
95% Normal UCL		95% UCLs (Adjusted for Skewness)
95% Student's-t UCL	927.9	95% Adjusted-CLT UCL (Chen-1995) 950.1
		95% Modified-t UCL (Johnson-1978) 931.4
Gamma GOF Test		
A-D Test Statistic	2.232	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.761	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0514	Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0468	Data Not Gamma Distributed at 5% Significance Level
Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics		
k hat (MLE)	2.854	k star (bias corrected MLE) 2.833
Theta hat (MLE)	303	Theta star (bias corrected MLE) 305.2
nu hat (MLE)	2180	nu star (bias corrected) 2165

MLE Mean (bias corrected)	864.8	MLE Sd (bias corrected)	513.8
		Approximate Chi Square Value (0.05)	2058
Adjusted Level of Significance	0.0494	Adjusted Chi Square Value	2057
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	909.8	95% Adjusted Gamma UCL (use when n<50)	910
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.949	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	7.77E-16	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0706	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0453	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.552	Mean of logged Data	6.577
Maximum of Logged Data	9.453	SD of logged Data	0.633
Assuming Lognormal Distribution			
95% H-UCL	932.8	90% Chebyshev (MVUE) UCL	970.6
95% Chebyshev (MVUE) UCL	1013	97.5% Chebyshev (MVUE) UCL	1071
99% Chebyshev (MVUE) UCL	1187		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	927.7	95% Jackknife UCL	927.9
95% Standard Bootstrap UCL	926.1	95% Bootstrap-t UCL	968.4
95% Hall's Bootstrap UCL	1229	95% Percentile Bootstrap UCL	932.8
95% BCA Bootstrap UCL	965.9		
90% Chebyshev(Mean, Sd) UCL	979.6	95% Chebyshev(Mean, Sd) UCL	1032
97.5% Chebyshev(Mean, Sd) UCL	1104	99% Chebyshev(Mean, Sd) UCL	1245
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1032		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***sum ddd***sum_ddd***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	398	Number of Distinct Observations	395
Number of Detects	384	Number of Non-Detects	14
Number of Distinct Detects	381	Number of Distinct Non-Detects	14
Minimum Detect	1.74E-04	Minimum Non-Detect	0.00642
Maximum Detect	0.105	Maximum Non-Detect	0.0103
Variance Detects	1.01E-04	Percent Non-Detects	3.52%
Mean Detects	0.00942	SD Detects	0.0101
Median Detects	0.00622	CV Detects	1.067
Skewness Detects	3.469	Kurtosis Detects	22.95
Mean of Logged Detects	-5.131	SD of Logged Detects	1.018
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.745	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.183	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0452	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00922	Standard Error of Mean	4.99E-04
SD	0.00993	95% KM (BCA) UCL	0.01
95% KM (t) UCL	0.01	95% KM (Percentile Bootstrap) UCL	0.01
95% KM (z) UCL	0.01	95% KM Bootstrap t UCL	0.0102
90% KM Chebyshev UCL	0.0107	95% KM Chebyshev UCL	0.0114
97.5% KM Chebyshev UCL	0.0123	99% KM Chebyshev UCL	0.0142
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.993	Anderson-Darling GOF Test	
5% A-D Critical Value	0.78	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.073	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0474	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.212	k star (bias corrected MLE)	1.204
Theta hat (MLE)	0.00778	Theta star (bias corrected MLE)	0.00783

nu hat (MLE)	930.5	nu star (bias corrected)	924.5
MLE Mean (bias corrected)	0.00942	MLE Sd (bias corrected)	0.00859
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.863	nu hat (KM)	686.8
Approximate Chi Square Value (686.79, α)	627	Adjusted Chi Square Value (686.79, β)	626.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.0101	95% Gamma Adjusted KM-UCL (use when n<50)	0.0101
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.74E-04	Mean	0.00944
Maximum	0.105	Median	0.00664
SD	0.00988	CV	1.046
k hat (MLE)	1.251	k star (bias corrected MLE)	1.244
Theta hat (MLE)	0.00754	Theta star (bias corrected MLE)	0.00759
nu hat (MLE)	996.1	nu star (bias corrected)	989.9
MLE Mean (bias corrected)	0.00944	MLE Sd (bias corrected)	0.00847
		Adjusted Level of Significance (β)	0.0494
Approximate Chi Square Value (989.89, α)	917.9	Adjusted Chi Square Value (989.89, β)	917.6
95% Gamma Approximate UCL (use when n>=50)	0.0102	95% Gamma Adjusted UCL (use when n<50)	0.0102
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0514	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0452	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00921	Mean in Log Scale	-5.15
SD in Original Scale	0.00994	SD in Log Scale	1.005
95% t UCL (assumes normality of ROS data)	0.01	95% Percentile Bootstrap UCL	0.0101
95% BCA Bootstrap UCL	0.0102	95% Bootstrap t UCL	0.0101
95% H-UCL (Log ROS)	0.0107		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.155	95% H-UCL (KM -Log)	1.08%
KM SD (logged)	1.015	95% Critical H Value (KM-Log)	2.144
KM Standard Error of Mean (logged)	0.0514		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00924	Mean in Log Scale	-5.143
SD in Original Scale	0.00992	SD in Log Scale	1.002
95% t UCL (Assumes normality)	0.0101	95% H-Stat UCL	0.0107
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.0114		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***sum ddd***sum_ddd***t***ug/kg)			
General Statistics			
Total Number of Observations	398	Number of Distinct Observations	368
Number of Detects	384	Number of Non-Detects	14
Number of Distinct Detects	360	Number of Distinct Non-Detects	12
Minimum Detect	0.92	Minimum Non-Detect	63.32
Maximum Detect	1369	Maximum Non-Detect	106.4
Variance Detects	14237	Percent Non-Detects	3.52%
Mean Detects	92.18	SD Detects	119.3
Median Detects	50.99	CV Detects	1.294
Skewness Detects	4.293	Kurtosis Detects	35.58
Mean of Logged Detects	3.787	SD of Logged Detects	1.332
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.698	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.222	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0452	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			

Mean	89.9	Standard Error of Mean	5.913
SD	117.7	95% KM (BCA) UCL	100.9
95% KM (t) UCL	99.65	95% KM (Percentile Bootstrap) UCL	99.49
95% KM (z) UCL	99.63	95% KM Bootstrap t UCL	100.7
90% KM Chebyshev UCL	107.6	95% KM Chebyshev UCL	115.7
97.5% KM Chebyshev UCL	126.8	99% KM Chebyshev UCL	148.7

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	3.724	Anderson-Darling GOF Test	
5% A-D Critical Value	0.795	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0879	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.048	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.805	k star (bias corrected MLE)	0.8
Theta hat (MLE)	114.5	Theta star (bias corrected MLE)	115.2
nu hat (MLE)	618.2	nu star (bias corrected)	614.7
MLE Mean (bias corrected)	92.18	MLE Sd (bias corrected)	103

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.583	nu hat (KM)	464.1
Approximate Chi Square Value (464.13, α)	415.2	Adjusted Chi Square Value (464.13, β)	415
95% Gamma Approximate KM-UCL (use when n>=50)	100.5	95% Gamma Adjusted KM-UCL (use when n<50)	100.5

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.92	Mean	89.61
Maximum	1369	Median	47.2
SD	118	CV	1.317
k hat (MLE)	0.799	k star (bias corrected MLE)	0.795
Theta hat (MLE)	112.1	Theta star (bias corrected MLE)	112.7
nu hat (MLE)	636.3	nu star (bias corrected)	632.9
MLE Mean (bias corrected)	89.61	MLE Sd (bias corrected)	100.5
		Adjusted Level of Significance (β)	0.0494
Approximate Chi Square Value (632.89, α)	575.5	Adjusted Chi Square Value (632.89, β)	575.3
95% Gamma Approximate UCL (use when n>=50)	98.54	95% Gamma Adjusted UCL (use when n<50)	98.57

Lognormal GOF Test on Detected Observations Only

Lilliefors Test Statistic	0.0969	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0452	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	89.74	Mean in Log Scale	3.763
SD in Original Scale	117.9	SD in Log Scale	1.315
95% t UCL (assumes normality of ROS data)	99.48	95% Percentile Bootstrap UCL	99.96
95% BCA Bootstrap UCL	101.5	95% Bootstrap t UCL	#####
95% H-UCL (Log ROS)	119.9		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	90.47	Mean in Log Scale	3.786
SD in Original Scale	117.5	SD in Log Scale	1.308
95% t UCL (Assumes normality)	100.2	95% H-Stat UCL	121.5

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

95% KM (Chebyshev) UCL	115.7
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***sum dde***sum_dde***t***mg/kg (at 1% toc))

General Statistics

Total Number of Observations	398	Number of Distinct Observations	396
Number of Detects	391	Number of Non-Detects	7
Number of Distinct Detects	389	Number of Distinct Non-Detects	7
Minimum Detect	1.81E-04	Minimum Non-Detect	0.007
Maximum Detect	0.053	Maximum Non-Detect	0.0142
Variance Detects	3.47E-05	Percent Non-Detects	1.76%
Mean Detects	0.00621	SD Detects	0.00589

Median Detects	0.00421	CV Detects	0.949
Skewness Detects	2.731	Kurtosis Detects	12.74
Mean of Logged Detects	-5.43	SD of Logged Detects	0.837
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.765	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.182	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0448	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00617	Standard Error of Mean	2.94E-04
SD	0.00585	95% KM (BCA) UCL	0.00665
95% KM (t) UCL	0.00666	95% KM (Percentile Bootstrap) UCL	0.00667
95% KM (z) UCL	0.00665	95% KM Bootstrap t UCL	0.00671
90% KM Chebyshev UCL	0.00705	95% KM Chebyshev UCL	0.00745
97.5% KM Chebyshev UCL	0.00801	99% KM Chebyshev UCL	0.0091
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.662	Anderson-Darling GOF Test	
5% A-D Critical Value	0.772	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0881	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0466	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.579	k star (bias corrected MLE)	1.569
Theta hat (MLE)	0.00393	Theta star (bias corrected MLE)	0.00396
nu hat (MLE)	1235	nu star (bias corrected)	1227
MLE Mean (bias corrected)	0.00621	MLE Sd (bias corrected)	0.00496
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.113	nu hat (KM)	886.1
Approximate Chi Square Value (886.14, α)	818.1	Adjusted Chi Square Value (886.14, β)	817.8
95% Gamma Approximate KM-UCL (use when n>=50)	0.00668	95% Gamma Adjusted KM-UCL (use when n<50)	0.00669
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.81E-04	Mean	0.00628
Maximum	0.053	Median	0.00424
SD	0.00586	CV	0.934
k hat (MLE)	1.595	k star (bias corrected MLE)	1.585
Theta hat (MLE)	0.00393	Theta star (bias corrected MLE)	0.00396
nu hat (MLE)	1270	nu star (bias corrected)	1262
MLE Mean (bias corrected)	0.00628	MLE Sd (bias corrected)	0.00499
		Adjusted Level of Significance (β)	0.0494
Approximate Chi Square Value (N/A, α)	1180	Adjusted Chi Square Value (N/A, β)	1180
95% Gamma Approximate UCL (use when n>=50)	0.00671	95% Gamma Adjusted UCL (use when n<50)	0.00671
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0366	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0448	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00616	Mean in Log Scale	-5.434
SD in Original Scale	0.00585	SD in Log Scale	0.83
95% t UCL (assumes normality of ROS data)	0.00665	95% Percentile Bootstrap UCL	0.00666
95% BCA Bootstrap UCL	0.00667	95% Bootstrap t UCL	0.67%
95% H-UCL (Log ROS)	0.0067		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-5.436	95% H-UCL (KM -Log)	0.00671
KM SD (logged)	0.834	95% Critical H Value (KM-Log)	2.003
KM Standard Error of Mean (logged)	0.0421		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00619	Mean in Log Scale	-5.428
SD in Original Scale	0.00584	SD in Log Scale	0.831
95% t UCL (Assumes normality)	0.00667	95% H-Stat UCL	0.00674
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			

95% KM (BCA) UCL		0.00665	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***sum dde***sum_dde***t***ug/kg)			
General Statistics			
Total Number of Observations	398	Number of Distinct Observations	375
Number of Detects	391	Number of Non-Detects	7
Number of Distinct Detects	368	Number of Distinct Non-Detects	7
Minimum Detect	1.05	Minimum Non-Detect	80
Maximum Detect	620	Maximum Non-Detect	140
Variance Detects	5103	Percent Non-Detects	1.76%
Mean Detects	59.13	SD Detects	71.43
Median Detects	34.85	CV Detects	1.208
Skewness Detects	3.085	Kurtosis Detects	15.01
Mean of Logged Detects	3.493	SD of Logged Detects	1.119
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.712	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.209	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0448	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	58.65	Standard Error of Mean	3.562
SD	70.89	95% KM (BCA) UCL	64.39
95% KM (t) UCL	64.52	95% KM (Percentile Bootstrap) UCL	64.49
95% KM (z) UCL	64.5	95% KM Bootstrap t UCL	65.49
90% KM Chebyshev UCL	69.33	95% KM Chebyshev UCL	74.17
97.5% KM Chebyshev UCL	80.89	99% KM Chebyshev UCL	94.09
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.469	Anderson-Darling GOF Test	
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.105	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0472	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.985	k star (bias corrected MLE)	0.979
Theta hat (MLE)	60.01	Theta star (bias corrected MLE)	60.36
nu hat (MLE)	770.5	nu star (bias corrected)	765.9
MLE Mean (bias corrected)	59.13	MLE Sd (bias corrected)	59.74
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.684	nu hat (KM)	544.8
Approximate Chi Square Value (544.76, α)	491.6	Adjusted Chi Square Value (544.76, β)	491.4
95% Gamma Approximate KM-UCL (use when n>=50)	64.98	95% Gamma Adjusted KM-UCL (use when n<50)	65.01
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.05	Mean	58.52
Maximum	620	Median	32.15
SD	70.95	CV	1.212
k hat (MLE)	0.993	k star (bias corrected MLE)	0.987
Theta hat (MLE)	58.93	Theta star (bias corrected MLE)	59.27
nu hat (MLE)	790.5	nu star (bias corrected)	785.9
MLE Mean (bias corrected)	58.52	MLE Sd (bias corrected)	58.89
		Adjusted Level of Significance (β)	0.0494
Approximate Chi Square Value (785.89, α)	721.8	Adjusted Chi Square Value (785.89, β)	721.6
95% Gamma Approximate UCL (use when n>=50)	63.71	95% Gamma Adjusted UCL (use when n<50)	63.73
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0697	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0448	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	58.52	Mean in Log Scale	3.488
SD in Original Scale	70.95	SD in Log Scale	1.11
95% t UCL (assumes normality of ROS data)	64.38	95% Percentile Bootstrap UCL	64.49
95% BCA Bootstrap UCL	65.01	95% Bootstrap t UCL	64.77
95% H-UCL (Log ROS)	68.58		

DL/2 Statistics			
DL/2 Normal	DL/2 Log-Transformed		
Mean in Original Scale	58.99	Mean in Log Scale	3.5
SD in Original Scale	70.82	SD in Log Scale	1.111
95% t UCL (Assumes normality)	64.85	95% H-Stat UCL	69.55
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
95% KM (Chebyshev) UCL	74.17

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***sum ddt***sum_ddt***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	398	Number of Distinct Observations	388
Number of Detects	278	Number of Non-Detects	120
Number of Distinct Detects	271	Number of Distinct Non-Detects	120
Minimum Detect	7.00E-05	Minimum Non-Detect	3.47E-05
Maximum Detect	0.123	Maximum Non-Detect	0.0213
Variance Detects	9.36E-05	Percent Non-Detects	30.15%
Mean Detects	0.00339	SD Detects	0.00968
Median Detects	0.001	CV Detects	2.856
Skewness Detects	8.065	Kurtosis Detects	86.89
Mean of Logged Detects	-6.669	SD of Logged Detects	1.116

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.336	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.366	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0531	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.00252	Standard Error of Mean	4.12E-04
SD	0.00819	95% KM (BCA) UCL	0.00329
95% KM (t) UCL	0.0032	95% KM (Percentile Bootstrap) UCL	0.00322
95% KM (z) UCL	0.0032	95% KM Bootstrap t UCL	0.00351
90% KM Chebyshev UCL	0.00375	95% KM Chebyshev UCL	0.00431
97.5% KM Chebyshev UCL	0.00509	99% KM Chebyshev UCL	0.00661

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	30.07	Anderson-Darling GOF Test	
5% A-D Critical Value	0.809	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.259	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0573	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.626	k star (bias corrected MLE)	0.621
Theta hat (MLE)	0.00541	Theta star (bias corrected MLE)	0.00545
nu hat (MLE)	348	nu star (bias corrected)	345.5
MLE Mean (bias corrected)	0.00339	MLE Sd (bias corrected)	0.0043

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0946	nu hat (KM)	75.26
Approximate Chi Square Value (75.26, α)	56.28	Adjusted Chi Square Value (75.26, β)	56.22
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.00337	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.00337
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	7.00E-05	Mean	0.00538
Maximum	0.123	Median	0.00166
SD	0.00863	CV	1.604
k hat (MLE)	0.731	k star (bias corrected MLE)	0.727
Theta hat (MLE)	0.00736	Theta star (bias corrected MLE)	0.0074
nu hat (MLE)	581.9	nu star (bias corrected)	578.8
MLE Mean (bias corrected)	0.00538	MLE Sd (bias corrected)	0.00631
		Adjusted Level of Significance (β)	0.0494
Approximate Chi Square Value (578.84, α)	524	Adjusted Chi Square Value (578.84, β)	523.8

95% Gamma Approximate UCL (use when n>=50)	0.00594	95% Gamma Adjusted UCL (use when n<50)	0.00595
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.131	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0531	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00249	Mean in Log Scale	-7.085
SD in Original Scale	0.0082	SD in Log Scale	1.19
95% t UCL (assumes normality of ROS data)	0.00316	95% Percentile Bootstrap UCL	0.00322
95% BCA Bootstrap UCL	0.00344	95% Bootstrap t UCL	0.00352
95% H-UCL (Log ROS)	0.00195		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0027	Mean in Log Scale	-6.951
SD in Original Scale	0.00821	SD in Log Scale	1.224
95% t UCL (Assumes normality)	0.00338	95% H-Stat UCL	0.00233
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.00431		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***sum ddt***sum_ddt***t***ug/kg)			
General Statistics			
Total Number of Observations	398	Number of Distinct Observations	369
Number of Detects	278	Number of Non-Detects	120
Number of Distinct Detects	267	Number of Distinct Non-Detects	112
Minimum Detect	0.231	Minimum Non-Detect	0.157
Maximum Detect	1706	Maximum Non-Detect	186.3
Variance Detects	14378	Percent Non-Detects	30.15%
Mean Detects	33.78	SD Detects	119.9
Median Detects	8.613	CV Detects	3.55
Skewness Detects	10.56	Kurtosis Detects	138.7
Mean of Logged Detects	2.282	SD of Logged Detects	1.318
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.277	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.39	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0531	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	24.69	Standard Error of Mean	5.077
SD	101.1	95% KM (BCA) UCL	34.33
95% KM (t) UCL	33.06	95% KM (Percentile Bootstrap) UCL	33.76
95% KM (z) UCL	33.04	95% KM Bootstrap t UCL	40.31
90% KM Chebyshev UCL	39.92	95% KM Chebyshev UCL	46.82
97.5% KM Chebyshev UCL	56.4	99% KM Chebyshev UCL	75.21
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	23.45	Anderson-Darling GOF Test	
5% A-D Critical Value	0.82	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.235	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0577	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	5.11E-01	k star (bias corrected MLE)	0.508
Theta hat (MLE)	66.06	Theta star (bias corrected MLE)	66.46
nu hat (MLE)	284.3	nu star (bias corrected)	282.6
MLE Mean (bias corrected)	33.78	MLE Sd (bias corrected)	47.38
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0597	nu hat (KM)	47.51
Approximate Chi Square Value (47.51, α)	32.69	Adjusted Chi Square Value (47.51, β)	32.65
95% Gamma Approximate KM-UCL (use when n>=50)	35.88	95% Gamma Adjusted KM-UCL (use when n<50)	35.93
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 23.6
Maximum	1706	Median 4.39
SD	101.4	CV 4.295
k hat (MLE)	0.242	k star (bias corrected MLE) 0.241
Theta hat (MLE)	97.66	Theta star (bias corrected MLE) 97.72
nu hat (MLE)	192.3	nu star (bias corrected) 192.2
MLE Mean (bias corrected)	23.6	MLE Sd (bias corrected) 48.02
		Adjusted Level of Significance (β) 0.0494
Approximate Chi Square Value (192.23, α)	161.2	Adjusted Chi Square Value (192.23, β) 161
95% Gamma Approximate UCL (use when n>=50)	28.15	95% Gamma Adjusted UCL (use when n<50) 28.17
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0913	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0531	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	24.35	Mean in Log Scale 1.782
SD in Original Scale	101.2	SD in Log Scale 1.415
95% t UCL (assumes normality of ROS data)	32.71	95% Percentile Bootstrap UCL 33.4
95% BCA Bootstrap UCL	36.44	95% Bootstrap t UCL 40.01
95% H-UCL (Log ROS)	19.3	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	26.72	Mean in Log Scale 1.978
SD in Original Scale	101.2	SD in Log Scale 1.431
95% t UCL (Assumes normality)	35.08	95% H-Stat UCL 24.13
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	46.82	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***thallium***7440-28-0***t***mg/kg)		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 287
Number of Detects	364	Number of Non-Detects 2
Number of Distinct Detects	285	Number of Distinct Non-Detects 2
Minimum Detect	0.022	Minimum Non-Detect 0.345
Maximum Detect	2.45	Maximum Non-Detect 0.445
Variance Detects	0.0629	Percent Non-Detects 0.55%
Mean Detects	0.348	SD Detects 0.251
Median Detects	0.28	CV Detects 0.721
Skewness Detects	2.823	Kurtosis Detects 15.72
Mean of Logged Detects	-1.277	SD of Logged Detects 0.695
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.816	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.143	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0464	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.347	Standard Error of Mean 0.0131
SD	0.25	95% KM (BCA) UCL 0.369
95% KM (t) UCL	0.369	95% KM (Percentile Bootstrap) UCL 0.368
95% KM (z) UCL	0.368	95% KM Bootstrap t UCL 0.37
90% KM Chebyshev UCL	0.386	95% KM Chebyshev UCL 0.404
97.5% KM Chebyshev UCL	0.429	99% KM Chebyshev UCL 0.477
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.675	Anderson-Darling GOF Test
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0593	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0482	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	2.424 k star (bias corrected MLE)	2.406
Theta hat (MLE)	0.143 Theta star (bias corrected MLE)	0.144
nu hat (MLE)	1765 nu star (bias corrected)	1752
MLE Mean (bias corrected)	0.348 MLE Sd (bias corrected)	0.224
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.926 nu hat (KM)	1410
Approximate Chi Square Value (N/A, α)	1324 Adjusted Chi Square Value (N/A, β)	1324
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.37 95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.37
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.022 Mean	0.347
Maximum	2.45 Median	0.278
SD	0.25 CV	0.721
k hat (MLE)	2.431 k star (bias corrected MLE)	2.413
Theta hat (MLE)	0.143 Theta star (bias corrected MLE)	0.144
nu hat (MLE)	1780 nu star (bias corrected)	1766
MLE Mean (bias corrected)	0.347 MLE Sd (bias corrected)	0.223
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1670 Adjusted Chi Square Value (N/A, β)	1669
95% Gamma Approximate UCL (use when $n \geq 50$)	0.367 95% Gamma Adjusted UCL (use when $n < 50$)	0.367
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0643 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.347 Mean in Log Scale	-1.278
SD in Original Scale	0.25 SD in Log Scale	0.694
95% t UCL (assumes normality of ROS data)	0.368 95% Percentile Bootstrap UCL	0.37
95% BCA Bootstrap UCL	0.371 95% Bootstrap t UCL	0.371
95% H-UCL (Log ROS)	0.38	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.347 Mean in Log Scale	-1.279
SD in Original Scale	0.25 SD in Log Scale	0.694
95% t UCL (Assumes normality)	0.368 95% H-Stat UCL	0.38
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	0.369	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***thallium***7440-28-0***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	361
Number of Detects	364 Number of Non-Detects	2
Number of Distinct Detects	359 Number of Distinct Non-Detects	2
Minimum Detect	0.00206 Minimum Non-Detect	0.0197
Maximum Detect	0.219 Maximum Non-Detect	0.0251
Variance Detects	8.43E-04 Percent Non-Detects	0.55%
Mean Detects	0.0467 SD Detects	0.029
Median Detects	0.0453 CV Detects	0.622
Skewness Detects	1.274 Kurtosis Detects	4.262
Mean of Logged Detects	-3.293 SD of Logged Detects	0.743
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.923 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0694 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0465 Standard Error of Mean	0.00152
SD	0.029 95% KM (BCA) UCL	0.0491

95% KM (t) UCL	0.049	95% KM (Percentile Bootstrap) UCL	0.0489
95% KM (z) UCL	0.049	95% KM Bootstrap t UCL	0.0492
90% KM Chebyshev UCL	0.051	95% KM Chebyshev UCL	0.0531
97.5% KM Chebyshev UCL	0.056	99% KM Chebyshev UCL	0.0616

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.064	Anderson-Darling GOF Test	
5% A-D Critical Value	0.764	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0814	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0482	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.345	k star (bias corrected MLE)	2.327
Theta hat (MLE)	0.0199	Theta star (bias corrected MLE)	0.02
nu hat (MLE)	1707	nu star (bias corrected)	1694
MLE Mean (bias corrected)	0.0467	MLE Sd (bias corrected)	0.0306

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.563	nu hat (KM)	1876
Approximate Chi Square Value (N/A, α)	1777	Adjusted Chi Square Value (N/A, β)	1776
95% Gamma Approximate KM-UCL (use when n>=50)	0.0491	95% Gamma Adjusted KM-UCL (use when n<50)	0.0491

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00206	Mean	0.0465
Maximum	0.219	Median	0.045
SD	0.029	CV	0.625
k hat (MLE)	2.337	k star (bias corrected MLE)	2.32
Theta hat (MLE)	0.0199	Theta star (bias corrected MLE)	0.02
nu hat (MLE)	1711	nu star (bias corrected)	1698
MLE Mean (bias corrected)	0.0465	MLE Sd (bias corrected)	0.0305
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1604	Adjusted Chi Square Value (N/A, β)	1603
95% Gamma Approximate UCL (use when n>=50)	0.0492	95% Gamma Adjusted UCL (use when n<50)	0.0493

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.117	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0465	Mean in Log Scale	-3.298
SD in Original Scale	0.0291	SD in Log Scale	0.744
95% t UCL (assumes normality of ROS data)	0.049	95% Percentile Bootstrap UCL	0.049
95% BCA Bootstrap UCL	0.0493	95% Bootstrap t UCL	0.0491
95% H-UCL (Log ROS)	0.0526		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0465	Mean in Log Scale	-3.3
SD in Original Scale	0.0291	SD in Log Scale	0.747
95% t UCL (Assumes normality)	0.049	95% H-Stat UCL	0.0526
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	0.0491		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***tin***7440-31-5***t***mg/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	301
		Number of Missing Observations	0
Minimum	1.3	Mean	40.49
Maximum	245	Median	32.35
SD	30.36	Std. Error of Mean	1.587
Coefficient of Variation	0.75	Skewness	2.24

Normal GOF Test

Shapiro Wilk Test Statistic	0.829	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.133	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	43.11	95% Adjusted-CLT UCL (Chen-1995)	43.3
		95% Modified-t UCL (Johnson-1978)	43.14
Gamma GOF Test			
A-D Test Statistic	2.273	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.765	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0759	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0481	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.205	k star (bias corrected MLE)	2.189
Theta hat (MLE)	18.36	Theta star (bias corrected MLE)	18.5
nu hat (MLE)	1614	nu star (bias corrected)	1602
MLE Mean (bias corrected)	40.49	MLE Sd (bias corrected)	27.37
		Approximate Chi Square Value (0.05)	1510
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1510
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	42.96	95% Adjusted Gamma UCL (use when n<50)	42.97
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.983	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.413	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0474	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	0.262	Mean of logged Data	3.458
Maximum of Logged Data	5.501	SD of logged Data	0.715
Assuming Lognormal Distribution			
95% H-UCL	44.02	90% Chebyshev (MVUE) UCL	46.06
95% Chebyshev (MVUE) UCL	48.39	97.5% Chebyshev (MVUE) UCL	51.61
99% Chebyshev (MVUE) UCL	57.94		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	43.1	95% Jackknife UCL	43.11
95% Standard Bootstrap UCL	43.06	95% Bootstrap-t UCL	43.32
95% Hall's Bootstrap UCL	43.27	95% Percentile Bootstrap UCL	43.25
95% BCA Bootstrap UCL	43.2		
90% Chebyshev(Mean, Sd) UCL	45.25	95% Chebyshev(Mean, Sd) UCL	47.41
97.5% Chebyshev(Mean, Sd) UCL	50.4	99% Chebyshev(Mean, Sd) UCL	56.28
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	47.41		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***tin***7440-31-5***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	363
		Number of Missing Observations	0
Minimum	0.466	Mean	5.1
Maximum	146.1	Median	4.249
SD	7.801	Std. Error of Mean	0.408
Coefficient of Variation	1.529	Skewness	16.32
Normal GOF Test			
Shapiro Wilk Test Statistic	0.25	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.295	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	5.773	95% Adjusted-CLT UCL (Chen-1995)	6.143
		95% Modified-t UCL (Johnson-1978)	5.831
Gamma GOF Test			
A-D Test Statistic	2.73E+28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.761	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0906	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0479	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.741	k star (bias corrected MLE)	2.72
Theta hat (MLE)	1.861	Theta star (bias corrected MLE)	1.875
nu hat (MLE)	2006	nu star (bias corrected)	1991
MLE Mean (bias corrected)	5.1	MLE Sd (bias corrected)	3.092
		Approximate Chi Square Value (0.05)	1889
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1888
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	5.378	95% Adjusted Gamma UCL (use when n<50)	5.379
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.976	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0236	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.039	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data appear Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-0.763	Mean of logged Data	1.436
Maximum of Logged Data	4.984	SD of logged Data	0.542
Assuming Lognormal Distribution			
95% H-UCL	5.126	90% Chebyshev (MVUE) UCL	5.309
95% Chebyshev (MVUE) UCL	5.509	97.5% Chebyshev (MVUE) UCL	5.787
99% Chebyshev (MVUE) UCL	6.333		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	5.771	95% Jackknife UCL	5.773
95% Standard Bootstrap UCL	5.764	95% Bootstrap-t UCL	688.90%
95% Hall's Bootstrap UCL	8.473	95% Percentile Bootstrap UCL	5.843
95% BCA Bootstrap UCL	6.402		
90% Chebyshev(Mean, Sd) UCL	6.324	95% Chebyshev(Mean, Sd) UCL	6.878
97.5% Chebyshev(Mean, Sd) UCL	7.647	99% Chebyshev(Mean, Sd) UCL	9.158
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	6.878		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***toluene***108-88-3***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	172	Number of Distinct Observations	161
Number of Detects	28	Number of Non-Detects	144
Number of Distinct Detects	25	Number of Distinct Non-Detects	138
Minimum Detect	6.00E-05	Minimum Non-Detect	2.40E-04
Maximum Detect	0.887	Maximum Non-Detect	0.156
Variance Detects	0.0402	Percent Non-Detects	83.72%
Mean Detects	0.0941	SD Detects	0.2
Median Detects	5.25E-04	CV Detects	2.129
Skewness Detects	2.836	Kurtosis Detects	8.814
Mean of Logged Detects	-6.03	SD of Logged Detects	3.334
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.55	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.327	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			

Mean	0.0156	Standard Error of Mean	0.00673
SD	0.0867	95% KM (BCA) UCL	0.0277
95% KM (t) UCL	0.0267	95% KM (Percentile Bootstrap) UCL	0.0281
95% KM (z) UCL	0.0267	95% KM Bootstrap t UCL	0.0399
90% KM Chebyshev UCL	0.0358	95% KM Chebyshev UCL	0.0449
97.5% KM Chebyshev UCL	0.0576	99% KM Chebyshev UCL	0.0826

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.573	Anderson-Darling GOF Test	
5% A-D Critical Value	0.902	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.304	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.184	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only

k hat (MLE)	0.201	k star (bias corrected MLE)	0.203
Theta hat (MLE)	0.469	Theta star (bias corrected MLE)	0.464
nu hat (MLE)	11.23	nu star (bias corrected)	11.36
MLE Mean (bias corrected)	0.0941	MLE Sd (bias corrected)	0.209

Gamma Kaplan-Meier (KM) Statistics

k hat (KM)	0.0324	nu hat (KM)	11.14
Approximate Chi Square Value (11.14, α)	4.663	Adjusted Chi Square Value (11.14, β)	4.628
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0372	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0375
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detected data is small such as < 0.1

For such situations, GROS method tends to yield inflated values of UCLs and BTVs

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	6.00E-05	Mean	0.0237
Maximum	0.887	Median	0.01
SD	0.0855	CV	3.609
k hat (MLE)	0.569	k star (bias corrected MLE)	0.563
Theta hat (MLE)	0.0416	Theta star (bias corrected MLE)	0.0421
nu hat (MLE)	195.7	nu star (bias corrected)	193.7
MLE Mean (bias corrected)	0.0237	MLE Sd (bias corrected)	0.0316
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (193.65, α)	162.5	Adjusted Chi Square Value (193.65, β)	162.2
95% Gamma Approximate UCL (use when $n \geq 50$)	0.0282	95% Gamma Adjusted UCL (use when $n < 50$)	0.0283

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.823	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.232	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	0.0155	Mean in Log Scale	-8.054
SD in Original Scale	0.0869	SD in Log Scale	1.624
95% t UCL (assumes normality of ROS data)	0.0265	95% Percentile Bootstrap UCL	0.028
95% BCA Bootstrap UCL	0.0307	95% Bootstrap t UCL	0.0375
95% H-UCL (Log ROS)	0.00168		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0203	Mean in Log Scale	-7.002
SD in Original Scale	0.0873	SD in Log Scale	2.027
95% t UCL (Assumes normality)	0.0313	95% H-Stat UCL	0.0117

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

97.5% KM (Chebyshev) UCL	0.0576
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***toluene***108-88-3***t***ug/kg)

General Statistics

Total Number of Observations	172	Number of Distinct Observations	91
Number of Detects	28	Number of Non-Detects	144
Number of Distinct Detects	27	Number of Distinct Non-Detects	68
Minimum Detect	0.41	Minimum Non-Detect	2.3

Maximum Detect	8100	Maximum Non-Detect	1700
Variance Detects	3465632	Percent Non-Detects	83.72%
Mean Detects	897.4	SD Detects	1862
Median Detects	4.5	CV Detects	2.074
Skewness Detects	2.71	Kurtosis Detects	7.933
Mean of Logged Detects	3.055	SD of Logged Detects	3.447
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.563	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.328	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	148.4	Standard Error of Mean	62.83
SD	808.7	95% KM (BCA) UCL	254.6
95% KM (t) UCL	252.4	95% KM (Percentile Bootstrap) UCL	256.1
95% KM (z) UCL	251.8	95% KM Bootstrap t UCL	343.4
90% KM Chebyshev UCL	337	95% KM Chebyshev UCL	422.3
97.5% KM Chebyshev UCL	540.9	99% KM Chebyshev UCL	773.6
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.381	Anderson-Darling GOF Test	
5% A-D Critical Value	0.905	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.295	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.184	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.197	k star (bias corrected MLE)	0.2
Theta hat (MLE)	4556	Theta star (bias corrected MLE)	4494
nu hat (MLE)	11.03	nu star (bias corrected)	11.18
MLE Mean (bias corrected)	897.4	MLE Sd (bias corrected)	2008
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0337	nu hat (KM)	11.59
Approximate Chi Square Value (11.59, α)	4.96	Adjusted Chi Square Value (11.59, β)	4.923
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	347	95% Gamma Adjusted KM-UCL (use when $n < 50$)	349.6
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $> 50\%$ NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	146.7
Maximum	8100	Median	0.01
SD	810.9	CV	5.526
k hat (MLE)	0.0982	k star (bias corrected MLE)	0.1
Theta hat (MLE)	1495	Theta star (bias corrected MLE)	1463
nu hat (MLE)	33.77	nu star (bias corrected)	34.51
MLE Mean (bias corrected)	146.7	MLE Sd (bias corrected)	463.3
		Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (34.51, α)	22.07	Adjusted Chi Square Value (34.51, β)	21.99
95% Gamma Approximate UCL (use when $n \geq 50$)	229.4	95% Gamma Adjusted UCL (use when $n < 50$)	230.3
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.835	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.924	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.198	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.167	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	148.6	Mean in Log Scale	0.83
SD in Original Scale	810.5	SD in Log Scale	2.047
95% t UCL (assumes normality of ROS data)	250.8	95% Percentile Bootstrap UCL	255.9
95% BCA Bootstrap UCL	300.3	95% Bootstrap t UCL	344.6
95% H-UCL (Log ROS)	31		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	197.9	Mean in Log Scale	1.927
SD in Original Scale	815.7	SD in Log Scale	218.30%
95% t UCL (Assumes normality)	300.7	95% H-Stat UCL	131.4
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
97.5% KM (Chebyshev) UCL	540.9	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total btex (km) (rl)***tbtex_km_rl***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	172	Number of Distinct Observations 163
Number of Detects	51	Number of Non-Detects 121
Number of Distinct Detects	50	Number of Distinct Non-Detects 117
Minimum Detect	5.00E-04	Minimum Non-Detect 4.30E-04
Maximum Detect	3.614	Maximum Non-Detect 0.385
Variance Detects	0.473	Percent Non-Detects 70.35%
Mean Detects	0.324	SD Detects 0.688
Median Detects	0.00279	CV Detects 2.123
Skewness Detects	3.111	Kurtosis Detects 10.96
Mean of Logged Detects	-4.182	SD of Logged Detects 2.902
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.551	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.319	Lilliefors GOF Test
5% Lilliefors Critical Value	0.124	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0965	Standard Error of Mean 0.0307
SD	0.399	95% KM (BCA) UCL 0.151
95% KM (t) UCL	0.147	95% KM (Percentile Bootstrap) UCL 0.149
95% KM (z) UCL	0.147	95% KM Bootstrap t UCL 0.178
90% KM Chebyshev UCL	0.189	95% KM Chebyshev UCL 0.23
97.5% KM Chebyshev UCL	0.288	99% KM Chebyshev UCL 0.402
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.553	Anderson-Darling GOF Test
5% A-D Critical Value	0.895	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.32	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.137	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.235	k star (bias corrected MLE) 0.234
Theta hat (MLE)	1.379	Theta star (bias corrected MLE) 1.383
nu hat (MLE)	23.96	nu star (bias corrected) 23.88
MLE Mean (bias corrected)	0.324	MLE Sd (bias corrected) 0.669
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.0585	nu hat (KM) 20.13
Approximate Chi Square Value (20.13, α)	10.94	Adjusted Chi Square Value (20.13, β) 10.89
95% Gamma Approximate KM-UCL (use when n>=50)	0.178	95% Gamma Adjusted KM-UCL (use when n<50) 0.178
Gamma (KM) may not be used when k hat (KM) is < 0.1		
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	5.00E-04	Mean 0.103
Maximum	3.614	Median 0.01
SD	0.399	CV 3.868
k hat (MLE)	0.311	k star (bias corrected MLE) 0.309
Theta hat (MLE)	0.332	Theta star (bias corrected MLE) 0.333
nu hat (MLE)	106.9	nu star (bias corrected) 106.3
MLE Mean (bias corrected)	0.103	MLE Sd (bias corrected) 0.185
		Adjusted Level of Significance (β) 0.0486
Approximate Chi Square Value (106.33, α)	83.53	Adjusted Chi Square Value (106.33, β) 83.36
95% Gamma Approximate UCL (use when n>=50)	0.131	95% Gamma Adjusted UCL (use when n<50) 0.131
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.285	Lilliefors GOF Test
5% Lilliefors Critical Value	0.124	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.096	Mean in Log Scale -9.22
SD in Original Scale	0.4	SD in Log Scale 3.7
95% t UCL (assumes normality of ROS data)	0.147	95% Percentile Bootstrap UCL 0.149

95% BCA Bootstrap UCL	0.165	95% Bootstrap t UCL	0.179
95% H-UCL (Log ROS)	0.418		

DL/2 Statistics		DL/2 Log-Transformed	
DL/2 Normal	0.1	Mean in Log Scale	-6.211
Mean in Original Scale	0.4	SD in Log Scale	2.343
SD in Original Scale	0.151	95% H-Stat UCL	0.0596
95% t UCL (Assumes normality)			
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics
Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use	
97.5% KM (Chebyshev) UCL	0.288

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total btex (km) (rl)***tbtex_km_rl***t***ug/kg)

General Statistics			
Total Number of Observations	172	Number of Distinct Observations	109
Number of Detects	51	Number of Non-Detects	121
Number of Distinct Detects	51	Number of Distinct Non-Detects	62
Minimum Detect	5.55	Minimum Non-Detect	3
Maximum Detect	33000	Maximum Non-Detect	5200
Variance Detects	41872432	Percent Non-Detects	70.35%
Mean Detects	3163	SD Detects	6471
Median Detects	24.5	CV Detects	2.046
Skewness Detects	2.911	Kurtosis Detects	9.444
Mean of Logged Detects	4.979	SD of Logged Detects	2.965

Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.569	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.313	Lilliefors GOF Test
5% Lilliefors Critical Value	0.124	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	942.1	Standard Error of Mean	290.8
SD	3776	95% KM (BCA) UCL	1529
95% KM (t) UCL	1423	95% KM (Percentile Bootstrap) UCL	1440
95% KM (z) UCL	1420	95% KM Bootstrap t UCL	1685
90% KM Chebyshev UCL	1814	95% KM Chebyshev UCL	2210
97.5% KM Chebyshev UCL	2758	99% KM Chebyshev UCL	3835

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	4.54	Anderson-Darling GOF Test
5% A-D Critical Value	0.896	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.301	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.137	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.233	k star (bias corrected MLE)	0.233
Theta hat (MLE)	13567	Theta star (bias corrected MLE)	13605
nu hat (MLE)	23.78	nu star (bias corrected)	23.72
MLE Mean (bias corrected)	3163	MLE Sd (bias corrected)	6560

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0623	nu hat (KM)	21.42
Approximate Chi Square Value (21.42, α)	11.9	Adjusted Chi Square Value (21.42, β)	11.84
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	1695	95% Gamma Adjusted KM-UCL (use when $n < 50$)	1704
Gamma (KM) may not be used when k hat (KM) is < 0.1			

Gamma ROS Statistics using Imputed Non-Detects
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
GROS may not be used when kstar of detected data is small such as < 0.1
For such situations, GROS method tends to yield inflated values of UCLs and BTVs
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	938
Maximum	33000	Median	0.01
SD	3787	CV	4.038
k hat (MLE)	0.095	k star (bias corrected MLE)	0.0972
Theta hat (MLE)	9877	Theta star (bias corrected MLE)	9651
nu hat (MLE)	32.67	nu star (bias corrected)	33.43
MLE Mean (bias corrected)	938	MLE Sd (bias corrected)	3009

	Adjusted Level of Significance (β)	0.0486
Approximate Chi Square Value (33.43, α)	21.21 Adjusted Chi Square Value (33.43, β)	21.13
95% Gamma Approximate UCL (use when $n \geq 50$)	1478 95% Gamma Adjusted UCL (use when $n < 50$)	1484
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.261 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.124 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	938.1 Mean in Log Scale	-0.846
SD in Original Scale	3787 SD in Log Scale	4.466
95% t UCL (assumes normality of ROS data)	1416 95% Percentile Bootstrap UCL	1429
95% BCA Bootstrap UCL	1555 95% Bootstrap t UCL	1691
95% H-UCL (Log ROS)	79450	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	986.7 Mean in Log Scale	2.719
SD in Original Scale	3784 SD in Log Scale	2.522
95% t UCL (Assumes normality)	1464 95% H-Stat UCL	762.8
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
97.5% KM (Chebyshev) UCL	2758	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total chlordane (km) (rl)***tchlordane_km_ri***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	398 Number of Distinct Observations	398
Number of Detects	354 Number of Non-Detects	44
Number of Distinct Detects	354 Number of Distinct Non-Detects	44
Minimum Detect	2.10E-04 Minimum Non-Detect	3.80E-04
Maximum Detect	0.401 Maximum Non-Detect	0.447
Variance Detects	0.00346 Percent Non-Detects	11.06%
Mean Detects	0.0275 SD Detects	0.0589
Median Detects	0.00782 CV Detects	2.142
Skewness Detects	3.666 Kurtosis Detects	13.8
Mean of Logged Detects	-4.839 SD of Logged Detects	1.575
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.47 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.322 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0471 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.0251 Standard Error of Mean	0.00287
SD	0.0565 95% KM (BCA) UCL	0.0293
95% KM (t) UCL	0.0299 95% KM (Percentile Bootstrap) UCL	0.0298
95% KM (z) UCL	0.0299 95% KM Bootstrap t UCL	0.0305
90% KM Chebyshev UCL	0.0338 95% KM Chebyshev UCL	0.0377
97.5% KM Chebyshev UCL	0.0431 99% KM Chebyshev UCL	0.0537
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	13.44 Anderson-Darling GOF Test	
5% A-D Critical Value	0.822 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.125 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0511 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.509 k star (bias corrected MLE)	0.507
Theta hat (MLE)	0.054 Theta star (bias corrected MLE)	0.0542
nu hat (MLE)	360.4 nu star (bias corrected)	358.7
MLE Mean (bias corrected)	0.0275 MLE Sd (bias corrected)	0.0386
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.198 nu hat (KM)	157.5
Approximate Chi Square Value (157.50, α)	129.5 Adjusted Chi Square Value (157.50, β)	129.4
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.0306 95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.0306

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2.10E-04 Mean	0.0255
Maximum	0.401 Median	0.01
SD	0.0558 CV	2.183
k hat (MLE)	0.547 k star (bias corrected MLE)	0.544
Theta hat (MLE)	0.0467 Theta star (bias corrected MLE)	0.0469
nu hat (MLE)	435.3 nu star (bias corrected)	433.3
MLE Mean (bias corrected)	0.0255 MLE Sd (bias corrected)	0.0346
	Adjusted Level of Significance (β)	0.0494
Approximate Chi Square Value (433.33, α)	386.1 Adjusted Chi Square Value (433.33, β)	385.9
95% Gamma Approximate UCL (use when n>=50)	0.0287 95% Gamma Adjusted UCL (use when n<50)	0.0287
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0346 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0471 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	0.0247 Mean in Log Scale	-5.024
SD in Original Scale	0.0561 SD in Log Scale	1.609
95% t UCL (assumes normality of ROS data)	0.0293 95% Percentile Bootstrap UCL	0.0294
95% BCA Bootstrap UCL	0.0299 95% Bootstrap t UCL	0.0301
95% H-UCL (Log ROS)	0.0298	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-5.035 95% H-UCL (KM -Log)	0.0318
KM SD (logged)	1.649 95% Critical H Value (KM-Log)	2.741
KM Standard Error of Mean (logged)	0.0846	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	0.0292 Mean in Log Scale	-493.00%
SD in Original Scale	0.0616 SD in Log Scale	1.688
95% t UCL (Assumes normality)	0.0343 95% H-Stat UCL	0.038
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
97.5% KM (Chebyshev) UCL	0.0431	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total chlordane (km) (rl)***tchlordane_km_ri***t***ug/kg)		
General Statistics		
Total Number of Observations	398 Number of Distinct Observations	393
Number of Detects	354 Number of Non-Detects	44
Number of Distinct Detects	352 Number of Distinct Non-Detects	43
Minimum Detect	0.85 Minimum Non-Detect	1.3
Maximum Detect	4151 Maximum Non-Detect	4101
Variance Detects	379817 Percent Non-Detects	11.06%
Mean Detects	281.6 SD Detects	616.3
Median Detects	56.57 CV Detects	2.189
Skewness Detects	3.561 Kurtosis Detects	13.03
Mean of Logged Detects	4.09 SD of Logged Detects	1.868
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.479 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.324 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0471 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	257.3 Standard Error of Mean	30.03
SD	591.8 95% KM (BCA) UCL	312.4
95% KM (t) UCL	306.8 95% KM (Percentile Bootstrap) UCL	307.7
95% KM (z) UCL	306.7 95% KM Bootstrap t UCL	313.8
90% KM Chebyshev UCL	347.4 95% KM Chebyshev UCL	388.2
97.5% KM Chebyshev UCL	444.9 99% KM Chebyshev UCL	556.1
Gamma GOF Tests on Detected Observations Only		

A-D Test Statistic	11.68	Anderson-Darling GOF Test	
5% A-D Critical Value	0.842	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.127	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0517	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.421	k star (bias corrected MLE)	0.419
Theta hat (MLE)	668.8	Theta star (bias corrected MLE)	671.5
nu hat (MLE)	298.1	nu star (bias corrected)	296.9
MLE Mean (bias corrected)	281.6	MLE Sd (bias corrected)	434.8
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.189	nu hat (KM)	150.5
Approximate Chi Square Value (150.47, α)	123.1	Adjusted Chi Square Value (150.47, β)	123
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	314.5	95% Gamma Adjusted KM-UCL (use when $n < 50$)	314.7
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	251.3
Maximum	4151	Median	37.39
SD	587.5	CV	2.338
k hat (MLE)	0.309	k star (bias corrected MLE)	0.308
Theta hat (MLE)	813.6	Theta star (bias corrected MLE)	815.4
nu hat (MLE)	245.9	nu star (bias corrected)	245.3
MLE Mean (bias corrected)	251.3	MLE Sd (bias corrected)	452.7
		Adjusted Level of Significance (β)	0.0494
Approximate Chi Square Value (245.34, α)	210.1	Adjusted Chi Square Value (245.34, β)	210
95% Gamma Approximate UCL (use when $n \geq 50$)	293.5	95% Gamma Adjusted UCL (use when $n < 50$)	293.7
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0757	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0471	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	252.4	Mean in Log Scale	3.882
SD in Original Scale	587.1	SD in Log Scale	1.899
95% t UCL (assumes normality of ROS data)	300.9	95% Percentile Bootstrap UCL	302
95% BCA Bootstrap UCL	306.4	95% Bootstrap t UCL	309.9
95% H-UCL (Log ROS)	392.6		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	297.1	Mean in Log Scale	3.998
SD in Original Scale	634.9	SD in Log Scale	196.60%
95% t UCL (Assumes normality)	349.6	95% H-Stat UCL	510.5
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	444.9		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total cpah teq (epa 1993) (km) (rl)***tcpahtef7ma_km_ri***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
Number of Detects	360	Number of Non-Detects	6
Number of Distinct Detects	360	Number of Distinct Non-Detects	6
Minimum Detect	0.106	Minimum Non-Detect	0.857
Maximum Detect	3.739	Maximum Non-Detect	1.611
Variance Detects	0.262	Percent Non-Detects	1.64%
Mean Detects	0.787	SD Detects	0.512
Median Detects	0.638	CV Detects	0.65
Skewness Detects	2.528	Kurtosis Detects	8.953
Mean of Logged Detects	-0.393	SD of Logged Detects	0.534
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.773	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.165	Lilliefors GOF Test	

5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.784	Standard Error of Mean	0.0266
SD	0.508	95% KM (BCA) UCL	0.827
95% KM (t) UCL	0.828	95% KM (Percentile Bootstrap) UCL	0.832
95% KM (z) UCL	0.828	95% KM Bootstrap t UCL	0.836
90% KM Chebyshev UCL	0.864	95% KM Chebyshev UCL	0.9
97.5% KM Chebyshev UCL	0.95	99% KM Chebyshev UCL	1.049
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.213	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0945	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0482	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.421	k star (bias corrected MLE)	3.395
Theta hat (MLE)	0.23	Theta star (bias corrected MLE)	0.232
nu hat (MLE)	2463	nu star (bias corrected)	2444
MLE Mean (bias corrected)	0.787	MLE Sd (bias corrected)	0.427
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.38	nu hat (KM)	1742
Approximate Chi Square Value (N/A, α)	1646	Adjusted Chi Square Value (N/A, β)	1646
95% Gamma Approximate KM-UCL (use when n>=50)	0.83	95% Gamma Adjusted KM-UCL (use when n<50)	0.83
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.106	Mean	0.784
Maximum	3.739	Median	0.637
SD	0.508	CV	0.648
k hat (MLE)	3.461	k star (bias corrected MLE)	3.434
Theta hat (MLE)	0.226	Theta star (bias corrected MLE)	0.228
nu hat (MLE)	2533	nu star (bias corrected)	2514
MLE Mean (bias corrected)	0.784	MLE Sd (bias corrected)	0.423
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2398	Adjusted Chi Square Value (N/A, β)	2398
95% Gamma Approximate UCL (use when n>=50)	0.821	95% Gamma Adjusted UCL (use when n<50)	0.822
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0589	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.784	Mean in Log Scale	-0.395
SD in Original Scale	0.508	SD in Log Scale	0.53
95% t UCL (assumes normality of ROS data)	0.828	95% Percentile Bootstrap UCL	0.829
95% BCA Bootstrap UCL	0.831	95% Bootstrap t UCL	0.832
95% H-UCL (Log ROS)	0.815		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-0.396	95% H-UCL (KM -Log)	0.815
KM SD (logged)	0.532	95% Critical H Value (KM-Log)	1.81
KM Standard Error of Mean (logged)	0.028		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.783	Mean in Log Scale	-0.396
SD in Original Scale	0.509	SD in Log Scale	0.531
95% t UCL (Assumes normality)	0.827	95% H-Stat UCL	0.815
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.827		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total cpah teq (epa 1993) (km) (rl)***tcpahtef7ma_km_rl***t***ug/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
Number of Detects	360	Number of Non-Detects	6
Number of Distinct Detects	360	Number of Distinct Non-Detects	6
Minimum Detect	268.8	Minimum Non-Detect	7834
Maximum Detect	75234	Maximum Non-Detect	20590
Variance Detects	47828905	Percent Non-Detects	1.64%
Mean Detects	7047	SD Detects	6916
Median Detects	5361	CV Detects	0.981
Skewness Detects	4.143	Kurtosis Detects	29.93
Mean of Logged Detects	8.532	SD of Logged Detects	0.819
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.705	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.18	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7009	Standard Error of Mean	359.9
SD	6867	95% KM (BCA) UCL	7608
95% KM (t) UCL	7603	95% KM (Percentile Bootstrap) UCL	7625
95% KM (z) UCL	7601	95% KM Bootstrap t UCL	7711
90% KM Chebyshev UCL	8089	95% KM Chebyshev UCL	8578
97.5% KM Chebyshev UCL	9257	99% KM Chebyshev UCL	10590
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.406	Anderson-Darling GOF Test	
5% A-D Critical Value	0.77	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0558	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0487	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.67	k star (bias corrected MLE)	1.658
Theta hat (MLE)	4219	Theta star (bias corrected MLE)	4250
nu hat (MLE)	1203	nu star (bias corrected)	1194
MLE Mean (bias corrected)	7047	MLE Sd (bias corrected)	5473
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.042	nu hat (KM)	762.6
Approximate Chi Square Value (762.64, α)	699.6	Adjusted Chi Square Value (762.64, β)	699.3
95% Gamma Approximate KM-UCL (use when n>=50)	7641	95% Gamma Adjusted KM-UCL (use when n<50)	7644
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	268.8	Mean	6999
Maximum	75234	Median	5199
SD	6870	CV	0.982
k hat (MLE)	1.685	k star (bias corrected MLE)	1.673
Theta hat (MLE)	4153	Theta star (bias corrected MLE)	4183
nu hat (MLE)	1233	nu star (bias corrected)	1225
MLE Mean (bias corrected)	6999	MLE Sd (bias corrected)	5411
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1144	Adjusted Chi Square Value (N/A, β)	1144
95% Gamma Approximate UCL (use when n>=50)	7490	95% Gamma Adjusted UCL (use when n<50)	7492
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0311	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0467	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	6999	Mean in Log Scale	8.529
SD in Original Scale	6869	SD in Log Scale	0.813
95% t UCL (assumes normality of ROS data)	7592	95% Percentile Bootstrap UCL	7626
95% BCA Bootstrap UCL	7658	95% Bootstrap t UCL	7714
95% H-UCL (Log ROS)	7657		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	8.528	95% H-UCL (KM -Log)	7675
KM SD (logged)	0.816	95% Critical H Value (KM-Log)	1.987
KM Standard Error of Mean (logged)	0.043		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	

Mean in Original Scale	7031	Mean in Log Scale	8.534
SD in Original Scale	6869	SD in Log Scale	0.814
95% t UCL (Assumes normality)	7623	95% H-Stat UCL	7703
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	7608		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total cpah teq (epa 1993) (u = 1/2)***tscpahtef7ma_n***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	130	Number of Distinct Observations	130
		Number of Missing Observations	0
Minimum	0.123	Mean	0.741
Maximum	30.55	Median	0.39
SD	2.652	Std. Error of Mean	0.233
Coefficient of Variation	3.579	Skewness	11.17
Normal GOF Test			
Shapiro Wilk Test Statistic	0.156	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.408	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.126	95% Adjusted-CLT UCL (Chen-1995)	1.367
		95% Modified-t UCL (Johnson-1978)	1.164
Gamma GOF Test			
A-D Test Statistic	7.69E+28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.779	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.222	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0839	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.15	k star (bias corrected MLE)	1.129
Theta hat (MLE)	0.644	Theta star (bias corrected MLE)	0.656
nu hat (MLE)	299.1	nu star (bias corrected)	293.5
MLE Mean (bias corrected)	0.741	MLE Sd (bias corrected)	0.697
		Approximate Chi Square Value (0.05)	254.8
Adjusted Level of Significance	0.0482	Adjusted Chi Square Value	254.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.854	95% Adjusted Gamma UCL (use when n<50)	0.855
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.887	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	1.07E-14	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.105	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0777	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-2.097	Mean of logged Data	-0.794
Maximum of Logged Data	3.419	SD of logged Data	0.657
Assuming Lognormal Distribution			
95% H-UCL	0.627	90% Chebyshev (MVUE) UCL	0.666
95% Chebyshev (MVUE) UCL	0.714	97.5% Chebyshev (MVUE) UCL	0.781
99% Chebyshev (MVUE) UCL	0.912		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1.124	95% Jackknife UCL	1.126
95% Standard Bootstrap UCL	1.131	95% Bootstrap-t UCL	3.233
95% Hall's Bootstrap UCL	2.69	95% Percentile Bootstrap UCL	1.197
95% BCA Bootstrap UCL	1.623		

90% Chebyshev(Mean, Sd) UCL	1.439	95% Chebyshev(Mean, Sd) UCL	1.755
97.5% Chebyshev(Mean, Sd) UCL	2.194	99% Chebyshev(Mean, Sd) UCL	3.056
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1.755		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total cpah teq (epa 1993) (u = 1/2)***tscpahtef7ma_n***t***ug/kg)

General Statistics			
Total Number of Observations	130	Number of Distinct Observations	130
		Number of Missing Observations	0
Minimum	435.4	Mean	5500
Maximum	136290	Median	3011
SD	12599	Std. Error of Mean	1105
Coefficient of Variation	2.291	Skewness	9.028
Normal GOF Test			
Shapiro Wilk Test Statistic	0.309	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.344	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0777	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	7330	95% Adjusted-CLT UCL (Chen-1995)	8252
		95% Modified-t UCL (Johnson-1978)	7476
Gamma GOF Test			
A-D Test Statistic	5.423	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.781	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.145	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.084	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.069	k star (bias corrected MLE)	1.049
Theta hat (MLE)	5145	Theta star (bias corrected MLE)	5240
nu hat (MLE)	277.9	nu star (bias corrected)	272.9
MLE Mean (bias corrected)	5500	MLE Sd (bias corrected)	5368
		Approximate Chi Square Value (0.05)	235.6
Adjusted Level of Significance	0.0482	Adjusted Chi Square Value	235.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	6369	95% Adjusted Gamma UCL (use when n<50)	6380
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.973	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.149	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0606	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0777	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	6.076	Mean of logged Data	8.077
Maximum of Logged Data	11.82	SD of logged Data	0.886
Assuming Lognormal Distribution			
95% H-UCL	5613	90% Chebyshev (MVUE) UCL	6037
95% Chebyshev (MVUE) UCL	6621	97.5% Chebyshev (MVUE) UCL	7432
99% Chebyshev (MVUE) UCL	9025		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	7317	95% Jackknife UCL	7330
95% Standard Bootstrap UCL	7266	95% Bootstrap-t UCL	10663
95% Hall's Bootstrap UCL	14294	95% Percentile Bootstrap UCL	7532
95% BCA Bootstrap UCL	8716		
90% Chebyshev(Mean, Sd) UCL	8814	95% Chebyshev(Mean, Sd) UCL	10316
97.5% Chebyshev(Mean, Sd) UCL	12400	99% Chebyshev(Mean, Sd) UCL	16494
Suggested UCL to Use			
95% H-UCL	5613		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

RESULT_VALUE (studyarea***total cresol (o,m,p) (km) (rl)***t cresol_km_rl***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	335	Number of Distinct Observations	334
Number of Detects	215	Number of Non-Detects	120
Number of Distinct Detects	215	Number of Distinct Non-Detects	120
Minimum Detect	0.0131	Minimum Non-Detect	0.0306
Maximum Detect	2.484	Maximum Non-Detect	1.014
Variance Detects	0.086	Percent Non-Detects	35.82%
Mean Detects	0.135	SD Detects	0.293
Median Detects	0.0603	CV Detects	2.165
Skewness Detects	5.758	Kurtosis Detects	36.74
Mean of Logged Detects	-2.615	SD of Logged Detects	0.886
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.363	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.34	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0604	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.111	Standard Error of Mean	0.0132
SD	0.238	95% KM (BCA) UCL	0.134
95% KM (t) UCL	0.132	95% KM (Percentile Bootstrap) UCL	0.134
95% KM (z) UCL	0.132	95% KM Bootstrap t UCL	0.14
90% KM Chebyshev UCL	0.15	95% KM Chebyshev UCL	0.168
97.5% KM Chebyshev UCL	0.193	99% KM Chebyshev UCL	0.241
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	18.05	Anderson-Darling GOF Test	
5% A-D Critical Value	0.787	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.208	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0639	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.944	k star (bias corrected MLE)	0.933
Theta hat (MLE)	0.144	Theta star (bias corrected MLE)	0.145
nu hat (MLE)	405.7	nu star (bias corrected)	401.4
MLE Mean (bias corrected)	0.135	MLE Sd (bias corrected)	0.14
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.215	nu hat (KM)	144.3
Approximate Chi Square Value (144.26, α)	117.5	Adjusted Chi Square Value (144.26, β)	117.4
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	0.136	95% Gamma Adjusted KM-UCL (use when $n < 50$)	0.136
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.0974
Maximum	2.484	Median	0.0389
SD	0.24	CV	2.467
k hat (MLE)	0.908	k star (bias corrected MLE)	0.902
Theta hat (MLE)	0.107	Theta star (bias corrected MLE)	0.108
nu hat (MLE)	608.3	nu star (bias corrected)	604.2
MLE Mean (bias corrected)	0.0974	MLE Sd (bias corrected)	0.103
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (604.20, α)	548.2	Adjusted Chi Square Value (604.20, β)	547.9
95% Gamma Approximate UCL (use when $n \geq 50$)	0.107	95% Gamma Adjusted UCL (use when $n < 50$)	0.107
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.133	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0604	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.109	Mean in Log Scale	-2.684

SD in Original Scale	0.237	SD in Log Scale	0.72
95% t UCL (assumes normality of ROS data)	0.13	95% Percentile Bootstrap UCL	0.131
95% BCA Bootstrap UCL	0.138	95% Bootstrap t UCL	0.138
95% H-UCL (Log ROS)	0.0954		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.132	Mean in Log Scale	-2.469
SD in Original Scale	0.238	SD in Log Scale	0.806
95% t UCL (Assumes normality)	0.154	95% H-Stat UCL	0.128
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.134		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total cresol (o,m,p) (km) (rl)***tcresol_km_ri***t***ug/kg)			
General Statistics			
Total Number of Observations	335	Number of Distinct Observations	274
Number of Detects	215	Number of Non-Detects	120
Number of Distinct Detects	202	Number of Distinct Non-Detects	81
Minimum Detect	61.4	Minimum Non-Detect	112
Maximum Detect	41980	Maximum Non-Detect	7200
Variance Detects	17629832	Percent Non-Detects	35.82%
Mean Detects	1299	SD Detects	4199
Median Detects	467	CV Detects	3.231
Skewness Detects	8.003	Kurtosis Detects	69.35
Mean of Logged Detects	6.279	SD of Logged Detects	1.068
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.256	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.384	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0604	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1004	Standard Error of Mean	186.2
SD	3388	95% KM (BCA) UCL	1330
95% KM (t) UCL	1311	95% KM (Percentile Bootstrap) UCL	1335
95% KM (z) UCL	1310	95% KM Bootstrap t UCL	1698
90% KM Chebyshev UCL	1562	95% KM Chebyshev UCL	1815
97.5% KM Chebyshev UCL	2166	99% KM Chebyshev UCL	2856
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	16.26	Anderson-Darling GOF Test	
5% A-D Critical Value	0.803	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.203	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0647	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.681	k star (bias corrected MLE)	0.675
Theta hat (MLE)	1907	Theta star (bias corrected MLE)	1925
nu hat (MLE)	293	nu star (bias corrected)	290.2
MLE Mean (bias corrected)	1299	MLE Sd (bias corrected)	1582
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0878	nu hat (KM)	58.79
Approximate Chi Square Value (58.79, α)	42.16	Adjusted Chi Square Value (58.79, β)	42.1
95% Gamma Approximate KM-UCL (use when n \geq 50)	1400	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	1402
Gamma (KM) may not be used when k hat (KM) is $<$ 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $>$ 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as $<$ 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	891.2
Maximum	41980	Median	330
SD	3415	CV	3.832
k hat (MLE)	0.197	k star (bias corrected MLE)	0.197
Theta hat (MLE)	4520	Theta star (bias corrected MLE)	4515

nu hat (MLE)	132.1	nu star (bias corrected)	132.2
MLE Mean (bias corrected)	891.2	MLE Sd (bias corrected)	2006
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (132.25, α)	106.7	Adjusted Chi Square Value (132.25, β)	106.6
95% Gamma Approximate UCL (use when n>=50)	1105	95% Gamma Adjusted UCL (use when n<50)	1106
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0697	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0604	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	980.2	Mean in Log Scale	6.151
SD in Original Scale	3390	SD in Log Scale	0.912
95% t UCL (assumes normality of ROS data)	1286	95% Percentile Bootstrap UCL	1340
95% BCA Bootstrap UCL	1421	95% Bootstrap t UCL	1654
95% H-UCL (Log ROS)	787.4		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1215	Mean in Log Scale	6.431
SD in Original Scale	3391	SD in Log Scale	1
95% t UCL (Assumes normality)	1520	95% H-Stat UCL	1149
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	1815		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total ddx (km) (rl)***tddt_km_ri***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	398	Number of Distinct Observations	398
Number of Detects	358	Number of Non-Detects	40
Number of Distinct Detects	358	Number of Distinct Non-Detects	40
Minimum Detect	0.00128	Minimum Non-Detect	0.00216
Maximum Detect	0.164	Maximum Non-Detect	0.0893
Variance Detects	3.20E-04	Percent Non-Detects	10.05%
Mean Detects	0.019	SD Detects	0.0179
Median Detects	0.0127	CV Detects	0.94
Skewness Detects	2.816	Kurtosis Detects	14.73
Mean of Logged Detects	-4.321	SD of Logged Detects	0.862
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.778	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.17	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.0177	Standard Error of Mean	8.85E-04
SD	0.0176	95% KM (BCA) UCL	0.0192
95% KM (t) UCL	0.0191	95% KM (Percentile Bootstrap) UCL	0.0191
95% KM (z) UCL	0.0191	95% KM Bootstrap t UCL	0.0193
90% KM Chebyshev UCL	0.0203	95% KM Chebyshev UCL	0.0215
97.5% KM Chebyshev UCL	0.0232	99% KM Chebyshev UCL	0.0265
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.256	Anderson-Darling GOF Test	
5% A-D Critical Value	0.772	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0854	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.049	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.536	k star (bias corrected MLE)	1.525
Theta hat (MLE)	0.0124	Theta star (bias corrected MLE)	0.0125
nu hat (MLE)	1100	nu star (bias corrected)	1092
MLE Mean (bias corrected)	0.019	MLE Sd (bias corrected)	0.0154
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.015	nu hat (KM)	807.6
Approximate Chi Square Value (807.57, α)	742.6	Adjusted Chi Square Value (807.57, β)	742.4

95% Gamma Approximate KM-UCL (use when n>=50)	0.0192	95% Gamma Adjusted KM-UCL (use when n<50)	0.0192
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.00128	Mean	0.0182
Maximum	0.164	Median	0.0113
SD	0.0172	CV	0.946
k hat (MLE)	1.625	k star (bias corrected MLE)	1.614
Theta hat (MLE)	0.0112	Theta star (bias corrected MLE)	0.0112
nu hat (MLE)	1293	nu star (bias corrected)	1285
MLE Mean (bias corrected)	0.0182	MLE Sd (bias corrected)	0.0143
		Adjusted Level of Significance (β)	0.0494
Approximate Chi Square Value (N/A, α)	1203	Adjusted Chi Square Value (N/A, β)	1202
95% Gamma Approximate UCL (use when n>=50)	0.0194	95% Gamma Adjusted UCL (use when n<50)	0.0194
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0511	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.0176	Mean in Log Scale	-4.434
SD in Original Scale	0.0175	SD in Log Scale	0.9
95% t UCL (assumes normality of ROS data)	0.0191	95% Percentile Bootstrap UCL	0.0191
95% BCA Bootstrap UCL	0.0192	95% Bootstrap t UCL	0.0191
95% H-UCL (Log ROS)	0.0195		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-4.44	95% H-UCL (KM -Log)	0.0197
KM SD (logged)	0.917	95% Critical H Value (KM-Log)	2.066
KM Standard Error of Mean (logged)	0.0468		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.0179	Mean in Log Scale	-4.443
SD in Original Scale	0.0177	SD in Log Scale	0.946
95% t UCL (Assumes normality)	0.0193	95% H-Stat UCL	0.0203
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	0.0192		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total ddx (km) (rl)***tddt_km_rl***t***ug/kg)			
General Statistics			
Total Number of Observations	398	Number of Distinct Observations	397
Number of Detects	358	Number of Non-Detects	40
Number of Distinct Detects	358	Number of Distinct Non-Detects	40
Minimum Detect	4.015	Minimum Non-Detect	10.7
Maximum Detect	2284	Maximum Non-Detect	1045
Variance Detects	47000	Percent Non-Detects	10.05%
Mean Detects	183.1	SD Detects	216.8
Median Detects	118.8	CV Detects	1.184
Skewness Detects	3.889	Kurtosis Detects	28.5
Mean of Logged Detects	4.608	SD of Logged Detects	1.175
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.718	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.206	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0468	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	168.9	Standard Error of Mean	10.64
SD	211	95% KM (BCA) UCL	185.8
95% KM (t) UCL	186.4	95% KM (Percentile Bootstrap) UCL	187.4
95% KM (z) UCL	186.4	95% KM Bootstrap t UCL	188.9
90% KM Chebyshev UCL	200.8	95% KM Chebyshev UCL	215.2
97.5% KM Chebyshev UCL	235.3	99% KM Chebyshev UCL	274.7

Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	3.547	Anderson-Darling GOF Test
5% A-D Critical Value	0.786	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0929	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0496	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.963	k star (bias corrected MLE) 0.956
Theta hat (MLE)	190.2	Theta star (bias corrected MLE) 191.4
nu hat (MLE)	689.3	nu star (bias corrected) 684.8
MLE Mean (bias corrected)	183.1	MLE Sd (bias corrected) 187.2
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.64	nu hat (KM) 509.7
Approximate Chi Square Value (509.73, α)	458.4	Adjusted Chi Square Value (509.73, β) 458.2
95% Gamma Approximate KM-UCL (use when n>=50)	187.8	95% Gamma Adjusted KM-UCL (use when n<50) 187.9
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 166.8
Maximum	2284	Median 94.01
SD	211.5	CV 1.268
k hat (MLE)	0.619	k star (bias corrected MLE) 0.616
Theta hat (MLE)	269.4	Theta star (bias corrected MLE) 270.7
nu hat (MLE)	493	nu star (bias corrected) 490.7
MLE Mean (bias corrected)	166.8	MLE Sd (bias corrected) 212.5
		Adjusted Level of Significance (β) 0.0494
Approximate Chi Square Value (490.65, α)	440.3	Adjusted Chi Square Value (490.65, β) 440.1
95% Gamma Approximate UCL (use when n>=50)	185.9	95% Gamma Adjusted UCL (use when n<50) 186
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0704	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0468	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	168	Mean in Log Scale 4.47
SD in Original Scale	210.6	SD in Log Scale 1.211
95% t UCL (assumes normality of ROS data)	185.4	95% Percentile Bootstrap UCL 185.8
95% BCA Bootstrap UCL	188.2	95% Bootstrap t UCL 188
95% H-UCL (Log ROS)	209.2	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	172.5	Mean in Log Scale 4.485
SD in Original Scale	212.3	SD in Log Scale 1.242
95% t UCL (Assumes normality)	190.1	95% H-Stat UCL 222.1
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	215.2	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total dioxin/furan teq 1998 (avian) (km) (rl)***tdioxfur*_km_rl***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	241	Number of Distinct Observations 241
		Number of Missing Observations 0
Minimum	1.97E-06	Mean 2.73E-05
Maximum	3.06E-04	Median 1.81E-05
SD	2.99E-05	Std. Error of Mean 1.93E-06
Coefficient of Variation	N/A	Skewness 4.482
Normal GOF Test		
Shapiro Wilk Test Statistic	0.67	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.198	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3.05E-05	95% Adjusted-CLT UCL (Chen-1995)	3.11E-05
		95% Modified-t UCL (Johnson-1978)	3.06E-05

Gamma GOF Test			
A-D Test Statistic	2.386	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.772	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0979	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.06	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	1.473	k star (bias corrected MLE)	1.458
Theta hat (MLE)	1.86E-05	Theta star (bias corrected MLE)	1.88E-05
nu hat (MLE)	710.2	nu star (bias corrected)	702.7
MLE Mean (bias corrected)	2.73E-05	MLE Sd (bias corrected)	2.26E-05
		Approximate Chi Square Value (0.05)	642.2
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	641.8

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	2.99E-05	95% Adjusted Gamma UCL (use when n<50)	2.99E-05

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.987	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.801	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0366	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	-13.14	Mean of logged Data	-10.88
Maximum of Logged Data	-8.093	SD of logged Data	0.862

Assuming Lognormal Distribution			
95% H-UCL	3.05E-05	90% Chebyshev (MVUE) UCL	3.24E-05
95% Chebyshev (MVUE) UCL	3.48E-05	97.5% Chebyshev (MVUE) UCL	3.81E-05
99% Chebyshev (MVUE) UCL	4.46E-05		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs			
95% CLT UCL	3.05E-05	95% Jackknife UCL	3.05E-05
95% Standard Bootstrap UCL	3.05E-05	95% Bootstrap-t UCL	3.13E-05
95% Hall's Bootstrap UCL	3.23E-05	95% Percentile Bootstrap UCL	3.06E-05
95% BCA Bootstrap UCL	3.11E-05		
90% Chebyshev(Mean, Sd) UCL	3.31E-05	95% Chebyshev(Mean, Sd) UCL	3.57E-05
97.5% Chebyshev(Mean, Sd) UCL	3.94E-05	99% Chebyshev(Mean, Sd) UCL	4.65E-05

Suggested UCL to Use	
95% H-UCL	3.05E-05

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

RESULT_VALUE (studyarea***total dioxin/furan teq 1998 (avian) (km) (rl)***tdioxfurb_km_rl***t***ng/kg)

General Statistics			
Total Number of Observations	241	Number of Distinct Observations	241
		Number of Missing Observations	0
Minimum	4.885	Mean	214.1
Maximum	1767	Median	151.3
SD	216.7	Std. Error of Mean	13.96
Coefficient of Variation	1.012	Skewness	2.814

Normal GOF Test			
Shapiro Wilk Test Statistic	0.756	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.183	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	237.2	95% Adjusted-CLT UCL (Chen-1995)	239.8
		95% Modified-t UCL (Johnson-1978)	237.6

Gamma GOF Test

A-D Test Statistic	1.476	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.776	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.081	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0602	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics

k hat (MLE)	1.342	k star (bias corrected MLE)	1.328
Theta hat (MLE)	159.6	Theta star (bias corrected MLE)	161.2
nu hat (MLE)	646.9	nu star (bias corrected)	640.2
MLE Mean (bias corrected)	214.1	MLE Sd (bias corrected)	185.8
		Approximate Chi Square Value (0.05)	582.5
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	582.1

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	235.3	95% Adjusted Gamma UCL (use when n<50)	235.5
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.977	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.103	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0401	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			

Lognormal Statistics

Minimum of Logged Data	1.586	Mean of logged Data	4.95
Maximum of Logged Data	7.477	SD of logged Data	0.968

Assuming Lognormal Distribution

95% H-UCL	257.5	90% Chebyshev (MVUE) UCL	275.3
95% Chebyshev (MVUE) UCL	298.2	97.5% Chebyshev (MVUE) UCL	329.9
99% Chebyshev (MVUE) UCL	392.3		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	237.1	95% Jackknife UCL	237.2
95% Standard Bootstrap UCL	237.1	95% Bootstrap-t UCL	239.8
95% Hall's Bootstrap UCL	241.6	95% Percentile Bootstrap UCL	238.4
95% BCA Bootstrap UCL	242.3		
90% Chebyshev(Mean, Sd) UCL	256	95% Chebyshev(Mean, Sd) UCL	275
97.5% Chebyshev(Mean, Sd) UCL	301.3	99% Chebyshev(Mean, Sd) UCL	353

Suggested UCL to Use

95% H-UCL	257.5
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)

and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.

For additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.

H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.

It is therefore recommended to avoid the use of H-statistic based 95% UCLs.

Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

RESULT_VALUE (studyarea***total dioxin/furan teq 1998 (fish) (km) (rl)***tdioxfurf_km_rl***t***mg/kg (at 1% toc))

General Statistics

Total Number of Observations	241	Number of Distinct Observations	241
		Number of Missing Observations	0
Minimum	9.79E-07	Mean	1.88E-05
Maximum	2.31E-04	Median	1.15E-05
SD	2.24E-05	Std. Error of Mean	1.44E-06
Coefficient of Variation	N/A	Skewness	4.861

Normal GOF Test

Shapiro Wilk Test Statistic	0.626	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.218	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2.12E-05	95% Adjusted-CLT UCL (Chen-1995)	2.16E-05
		95% Modified-t UCL (Johnson-1978)	2.12E-05

Gamma GOF Test

A-D Test Statistic	4.087	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.774	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0601	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.404	k star (bias corrected MLE)	1.39
Theta hat (MLE)	1.34E-05	Theta star (bias corrected MLE)	1.35E-05
nu hat (MLE)	676.9	nu star (bias corrected)	669.8
MLE Mean (bias corrected)	1.88E-05	MLE Sd (bias corrected)	1.59E-05
		Approximate Chi Square Value (0.05)	610.8
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	610.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	2.06E-05	95% Adjusted Gamma UCL (use when n<50)	2.06E-05
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.989	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.893	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.066	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	-13.84	Mean of logged Data	-11.28
Maximum of Logged Data	-8.372	SD of logged Data	0.864

Assuming Lognormal Distribution

95% H-UCL	2.06E-05	90% Chebyshev (MVUE) UCL	2.19E-05
95% Chebyshev (MVUE) UCL	2.35E-05	97.5% Chebyshev (MVUE) UCL	2.57E-05
99% Chebyshev (MVUE) UCL	3.01E-05		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	2.12E-05	95% Jackknife UCL	2.12E-05
95% Standard Bootstrap UCL	2.12E-05	95% Bootstrap-t UCL	2.21E-05
95% Hall's Bootstrap UCL	2.23E-05	95% Percentile Bootstrap UCL	2.13E-05
95% BCA Bootstrap UCL	2.16E-05		
90% Chebyshev(Mean, Sd) UCL	2.31E-05	95% Chebyshev(Mean, Sd) UCL	2.51E-05
97.5% Chebyshev(Mean, Sd) UCL	2.78E-05	99% Chebyshev(Mean, Sd) UCL	3.31E-05

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	2.51E-05
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Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)

and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.

For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total dioxin/furan teq 1998 (fish) (km) (rl)***tdioxfurf_km_rl***t***ng/kg)

General Statistics

Total Number of Observations	241	Number of Distinct Observations	241
		Number of Missing Observations	0
Minimum	3.175	Mean	146.8
Maximum	1337	Median	105.4
SD	153.5	Std. Error of Mean	9.886
Coefficient of Variation	1.045	Skewness	3.208

Normal GOF Test

Shapiro Wilk Test Statistic	0.737	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.178	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	163.1	95% Adjusted-CLT UCL (Chen-1995)	165.3

		95% Modified-t UCL (Johnson-1978)	163.5
Gamma GOF Test			
A-D Test Statistic	1.077	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.777	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0801	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0603	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.291	k star (bias corrected MLE)	1.277
Theta hat (MLE)	113.7	Theta star (bias corrected MLE)	114.9
nu hat (MLE)	622.2	nu star (bias corrected)	615.7
MLE Mean (bias corrected)	146.8	MLE Sd (bias corrected)	129.9
		Approximate Chi Square Value (0.05)	559.2
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	558.9
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	161.7	95% Adjusted Gamma UCL (use when n<50)	161.8
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.975	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0547	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0635	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.155	Mean of logged Data	4.554
Maximum of Logged Data	7.198	SD of logged Data	0.998
Assuming Lognormal Distribution			
95% H-UCL	179.5	90% Chebyshev (MVUE) UCL	192.3
95% Chebyshev (MVUE) UCL	208.8	97.5% Chebyshev (MVUE) UCL	231.7
99% Chebyshev (MVUE) UCL	276.7		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	163.1	95% Jackknife UCL	163.1
95% Standard Bootstrap UCL	163	95% Bootstrap-t UCL	166.9
95% Hall's Bootstrap UCL	166.5	95% Percentile Bootstrap UCL	164
95% BCA Bootstrap UCL	165.7		
90% Chebyshev(Mean, Sd) UCL	176.5	95% Chebyshev(Mean, Sd) UCL	189.9
97.5% Chebyshev(Mean, Sd) UCL	208.6	99% Chebyshev(Mean, Sd) UCL	245.2
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	189.9		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total dioxin/furan teq 2005 (mammal) (km) (rl)***tdioxfum_km_ri***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	241
		Number of Missing Observations	0
Minimum	1.10E-06	Mean	1.90E-05
Maximum	2.16E-04	Median	1.20E-05
SD	2.09E-05	Std. Error of Mean	1.35E-06
Coefficient of Variation	N/A	Skewness	4.714
Normal GOF Test			
Shapiro Wilk Test Statistic	0.643	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.205	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2.12E-05	95% Adjusted-CLT UCL (Chen-1995)	2.16E-05
		95% Modified-t UCL (Johnson-1978)	2.13E-05
Gamma GOF Test			
A-D Test Statistic	3.694	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.771	Data Not Gamma Distributed at 5% Significance Level	

K-S Test Statistic	0.114	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.06	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.577	k star (bias corrected MLE)	1.56
Theta hat (MLE)	1.20E-05	Theta star (bias corrected MLE)	1.22E-05
nu hat (MLE)	760	nu star (bias corrected)	751.9
MLE Mean (bias corrected)	1.90E-05	MLE Sd (bias corrected)	1.52E-05
		Approximate Chi Square Value (0.05)	689.3
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	688.9
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	2.07E-05	95% Adjusted Gamma UCL (use when n<50)	2.07E-05
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.99	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.943	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0628	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-13.72	Mean of logged Data	-11.22
Maximum of Logged Data	-8.442	SD of logged Data	0.812
Assuming Lognormal Distribution			
95% H-UCL	2.07E-05	90% Chebyshev (MVUE) UCL	2.19E-05
95% Chebyshev (MVUE) UCL	2.34E-05	97.5% Chebyshev (MVUE) UCL	2.55E-05
99% Chebyshev (MVUE) UCL	2.96E-05		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2.12E-05	95% Jackknife UCL	2.12E-05
95% Standard Bootstrap UCL	2.12E-05	95% Bootstrap-t UCL	2.19E-05
95% Hall's Bootstrap UCL	2.22E-05	95% Percentile Bootstrap UCL	2.14E-05
95% BCA Bootstrap UCL	2.17E-05		
90% Chebyshev(Mean, Sd) UCL	2.30E-05	95% Chebyshev(Mean, Sd) UCL	2.48E-05
97.5% Chebyshev(Mean, Sd) UCL	2.74E-05	99% Chebyshev(Mean, Sd) UCL	3.24E-05
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	2.48E-05		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total dioxin/furan teq 2005 (mammal) (km) (rl)***tdioxfum_km_rl***t***ng/kg)			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	241
		Number of Missing Observations	0
Minimum	3.568	Mean	150
Maximum	1246	Median	110.6
SD	145.9	Std. Error of Mean	9.4
Coefficient of Variation	0.973	Skewness	2.967
Normal GOF Test			
Shapiro Wilk Test Statistic	0.765	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.17	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	165.5	95% Adjusted-CLT UCL (Chen-1995)	167.4
		95% Modified-t UCL (Johnson-1978)	165.8
Gamma GOF Test			
A-D Test Statistic	0.725	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.774	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0587	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0601	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			

k hat (MLE)	1.395	k star (bias corrected MLE)	1.38
Theta hat (MLE)	107.6	Theta star (bias corrected MLE)	108.7
nu hat (MLE)	672.3	nu star (bias corrected)	665.3
MLE Mean (bias corrected)	150	MLE Sd (bias corrected)	127.7
		Approximate Chi Square Value (0.05)	606.4
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	606.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	164.6	95% Adjusted Gamma UCL (use when n<50)	164.7
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.97	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.00776	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0753	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.272	Mean of logged Data	4.611
Maximum of Logged Data	7.128	SD of logged Data	0.965
Assuming Lognormal Distribution			
95% H-UCL	183	90% Chebyshev (MVUE) UCL	195.7
95% Chebyshev (MVUE) UCL	211.9	97.5% Chebyshev (MVUE) UCL	234.4
99% Chebyshev (MVUE) UCL	278.7		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	165.5	95% Jackknife UCL	165.5
95% Standard Bootstrap UCL	165.6	95% Bootstrap-t UCL	167.4
95% Hall's Bootstrap UCL	167.8	95% Percentile Bootstrap UCL	165
95% BCA Bootstrap UCL	167.5		
90% Chebyshev(Mean, Sd) UCL	178.2	95% Chebyshev(Mean, Sd) UCL	191
97.5% Chebyshev(Mean, Sd) UCL	208.7	99% Chebyshev(Mean, Sd) UCL	243.5
Suggested UCL to Use			
95% Approximate Gamma UCL	164.6		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea****total extractable petroleum hydrocarbons (u = 1/2)****teph_n****t****mg/kg)			
General Statistics			
Total Number of Observations	205	Number of Distinct Observations	204
Number of Detects	200	Number of Non-Detects	5
Number of Distinct Detects	199	Number of Distinct Non-Detects	5
Minimum Detect	37.4	Minimum Non-Detect	16.3
Maximum Detect	59790	Maximum Non-Detect	23.5
Variance Detects	26923803	Percent Non-Detects	2.44%
Mean Detects	2607	SD Detects	5189
Median Detects	1402	CV Detects	1.991
Skewness Detects	7.66	Kurtosis Detects	76.85
Mean of Logged Detects	6.948	SD of Logged Detects	1.482
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.445	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.31	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0626	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2544	Standard Error of Mean	359
SD	5128	95% KM (BCA) UCL	3148
95% KM (t) UCL	3137	95% KM (Percentile Bootstrap) UCL	3217
95% KM (z) UCL	3134	95% KM Bootstrap t UCL	3600
90% KM Chebyshev UCL	3621	95% KM Chebyshev UCL	4109
97.5% KM Chebyshev UCL	4786	99% KM Chebyshev UCL	6116
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.715	Anderson-Darling GOF Test	
5% A-D Critical Value	0.805	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0707	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0666	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only		
k hat (MLE)	0.663 k star (bias corrected MLE)	0.657
Theta hat (MLE)	3929 Theta star (bias corrected MLE)	3968
nu hat (MLE)	265.4 nu star (bias corrected)	262.7
MLE Mean (bias corrected)	2607 MLE Sd (bias corrected)	3216
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.246 nu hat (KM)	100.9
Approximate Chi Square Value (100.87, α)	78.7 Adjusted Chi Square Value (100.87, β)	78.56
95% Gamma Approximate KM-UCL (use when n>=50)	3260 95% Gamma Adjusted KM-UCL (use when n<50)	#####
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	2543
Maximum	59790 Median	1371
SD	5141 CV	2.021
k hat (MLE)	0.535 k star (bias corrected MLE)	0.53
Theta hat (MLE)	4753 Theta star (bias corrected MLE)	4794
nu hat (MLE)	219.4 nu star (bias corrected)	217.5
MLE Mean (bias corrected)	2543 MLE Sd (bias corrected)	3492
	Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (217.49, α)	184.4 Adjusted Chi Square Value (217.49, β)	184.1
95% Gamma Approximate UCL (use when n>=50)	3000 95% Gamma Adjusted UCL (use when n<50)	3004
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.101 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0626 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2544 Mean in Log Scale	6.86
SD in Original Scale	5140 SD in Log Scale	1.568
95% t UCL (assumes normality of ROS data)	3137 95% Percentile Bootstrap UCL	3173
95% BCA Bootstrap UCL	3465 95% Bootstrap t UCL	3574
95% H-UCL (Log ROS)	4372	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	2543 Mean in Log Scale	6.834
SD in Original Scale	5141 SD in Log Scale	1.634
95% t UCL (Assumes normality)	3137 95% H-Stat UCL	4831
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	4109	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total extractable petroleum hydrocarbons (u = 1/2)***teph_n***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	205 Number of Distinct Observations	205
Number of Detects	200 Number of Non-Detects	5
Number of Distinct Detects	200 Number of Distinct Non-Detects	5
Minimum Detect	8.821 Minimum Non-Detect	4.74
Maximum Detect	5067 Maximum Non-Detect	6.12
Variance Detects	184624 Percent Non-Detects	2.44%
Mean Detects	248.7 SD Detects	429.7
Median Detects	154.7 CV Detects	1.728
Skewness Detects	7.863 Kurtosis Detects	81.34
Mean of Logged Detects	4.918 SD of Logged Detects	1.109
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.453 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.288 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0626 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	242.7 Standard Error of Mean	29.76
SD	425 95% KM (BCA) UCL	296

95% KM (t) UCL	291.9	95% KM (Percentile Bootstrap) UCL	294.7
95% KM (z) UCL	291.7	95% KM Bootstrap t UCL	325.6
90% KM Chebyshev UCL	332	95% KM Chebyshev UCL	372.5
97.5% KM Chebyshev UCL	428.6	99% KM Chebyshev UCL	538.8

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.189	Anderson-Darling GOF Test	
5% A-D Critical Value	0.785	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0944	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0656	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.969	k star (bias corrected MLE)	0.958
Theta hat (MLE)	256.7	Theta star (bias corrected MLE)	259.7
nu hat (MLE)	387.6	nu star (bias corrected)	383.1
MLE Mean (bias corrected)	248.7	MLE Sd (bias corrected)	254.1

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.326	nu hat (KM)	133.7
Approximate Chi Square Value (133.74, α)	108	Adjusted Chi Square Value (133.74, β)	107.9
95% Gamma Approximate KM-UCL (use when n>=50)	300.5	95% Gamma Adjusted KM-UCL (use when n<50)	301

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	242.6
Maximum	5067	Median	146.3
SD	426.1	CV	1.756
k hat (MLE)	0.744	k star (bias corrected MLE)	0.736
Theta hat (MLE)	326.1	Theta star (bias corrected MLE)	329.5
nu hat (MLE)	305	nu star (bias corrected)	301.9
MLE Mean (bias corrected)	242.6	MLE Sd (bias corrected)	282.8
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (301.89, α)	262.6	Adjusted Chi Square Value (301.89, β)	262.4
95% Gamma Approximate UCL (use when n>=50)	278.9	95% Gamma Adjusted UCL (use when n<50)	279.2

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0686	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0626	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	242.8	Mean in Log Scale	4.852
SD in Original Scale	426	SD in Log Scale	1.174
95% t UCL (assumes normality of ROS data)	292	95% Percentile Bootstrap UCL	299.6
95% BCA Bootstrap UCL	312	95% Bootstrap t UCL	324.6
95% H-UCL (Log ROS)	307.8		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	242.7	Mean in Log Scale	4.823
SD in Original Scale	426.1	SD in Log Scale	1.251
95% t UCL (Assumes normality)	291.9	95% H-Stat UCL	334.5
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (Chebyshev) UCL	372.5		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea****total heptachlorodibenzofuran (hpcdf)***38998-75-3****t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	241	Number of Distinct Observations	241
		Number of Missing Observations	0
Minimum	1.05E-05	Mean	2.74E-04
Maximum	0.00524	Median	1.64E-04
SD	4.21E-04	Std. Error of Mean	2.71E-05
Coefficient of Variation	1.535	Skewness	7.712

Normal GOF Test			
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Shapiro Wilk Test Statistic	0.483	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.272	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3.19E-04	95% Adjusted-CLT UCL (Chen-1995)	3.33E-04
		95% Modified-t UCL (Johnson-1978)	3.21E-04
Gamma GOF Test			
A-D Test Statistic	5.616	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.778	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.121	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0603	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.245	k star (bias corrected MLE)	1.232
Theta hat (MLE)	2.20E-04	Theta star (bias corrected MLE)	2.23E-04
nu hat (MLE)	600	nu star (bias corrected)	593.9
MLE Mean (bias corrected)	2.74E-04	MLE Sd (bias corrected)	2.47E-04
		Approximate Chi Square Value (0.05)	538.4
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	538.1
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	3.03E-04	95% Adjusted Gamma UCL (use when n<50)	3.03E-04
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.99	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.945	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.055	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-11.46	Mean of logged Data	-8.654
Maximum of Logged Data	-5.251	SD of logged Data	0.893
Assuming Lognormal Distribution			
95% H-UCL	2.93E-04	90% Chebyshev (MVUE) UCL	3.12E-04
95% Chebyshev (MVUE) UCL	3.36E-04	97.5% Chebyshev (MVUE) UCL	3.69E-04
99% Chebyshev (MVUE) UCL	4.33E-04		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3.19E-04	95% Jackknife UCL	3.19E-04
95% Standard Bootstrap UCL	3.21E-04	95% Bootstrap-t UCL	3.45E-04
95% Hall's Bootstrap UCL	5.24E-04	95% Percentile Bootstrap UCL	3.18E-04
95% BCA Bootstrap UCL	3.33E-04		
90% Chebyshev(Mean, Sd) UCL	3.56E-04	95% Chebyshev(Mean, Sd) UCL	3.92E-04
97.5% Chebyshev(Mean, Sd) UCL	4.44E-04	99% Chebyshev(Mean, Sd) UCL	5.44E-04
Suggested UCL to Use			
95% H-UCL	2.93E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_VALUE (studyarea****total heptachlorodibenzofuran (hpcdf)***38998-75-3****t***ng/kg)			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	207
		Number of Missing Observations	0
Minimum	23.4	Mean	2251
Maximum	30300	Median	1590
SD	2893	Std. Error of Mean	186.4
Coefficient of Variation	1.29E+00	Skewness	5.055
Normal GOF Test			

Shapiro Wilk Test Statistic	0.625	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.221	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2558	95% Adjusted-CLT UCL (Chen-1995)	2622
		95% Modified-t UCL (Johnson-1978)	2568
Gamma GOF Test			
A-D Test Statistic	1.323	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.782	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0754	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0606	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.062	k star (bias corrected MLE)	1.052
Theta hat (MLE)	2119	Theta star (bias corrected MLE)	2140
nu hat (MLE)	511.9	nu star (bias corrected)	506.8
MLE Mean (bias corrected)	2251	MLE Sd (bias corrected)	2195
		Approximate Chi Square Value (0.05)	455.6
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	455.3
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	2504	95% Adjusted Gamma UCL (use when n<50)	2505
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.974	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0385	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0891	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.153	Mean of logged Data	7.179
Maximum of Logged Data	10.32	SD of logged Data	1.119
Assuming Lognormal Distribution			
95% H-UCL	2890	90% Chebyshev (MVUE) UCL	3111
95% Chebyshev (MVUE) UCL	3413	97.5% Chebyshev (MVUE) UCL	3832
99% Chebyshev (MVUE) UCL	4656		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2557	95% Jackknife UCL	2558
95% Standard Bootstrap UCL	2555	95% Bootstrap-t UCL	2685
95% Hall's Bootstrap UCL	2721	95% Percentile Bootstrap UCL	2573
95% BCA Bootstrap UCL	2636		
90% Chebyshev(Mean, Sd) UCL	2810	95% Chebyshev(Mean, Sd) UCL	3063
97.5% Chebyshev(Mean, Sd) UCL	3415	99% Chebyshev(Mean, Sd) UCL	4105
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	3063		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total heptachlorodibenzo-p-dioxin (hpcdd)***37871-00-4***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	239
		Number of Missing Observations	0
Minimum	2.94E-05	Mean	3.55E-04
Maximum	0.00179	Median	3.05E-04
SD	2.22E-04	Std. Error of Mean	1.43E-05
Coefficient of Variation	0.623	Skewness	2.668
Normal GOF Test			
Shapiro Wilk Test Statistic	0.811	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.135	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3.79E-04	95% Adjusted-CLT UCL (Chen-1995)	3.81E-04
		95% Modified-t UCL (Johnson-1978)	3.79E-04
Gamma GOF Test			
A-D Test Statistic	1.39	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.759	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0618	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0593	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	3.234	k star (bias corrected MLE)	3.196
Theta hat (MLE)	1.10E-04	Theta star (bias corrected MLE)	1.11E-04
nu hat (MLE)	1559	nu star (bias corrected)	1541
MLE Mean (bias corrected)	3.55E-04	MLE Sd (bias corrected)	1.99E-04
		Approximate Chi Square Value (0.05)	1450
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	1450
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	3.77E-04	95% Adjusted Gamma UCL (use when n<50)	3.78E-04
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.965	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	7.76E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0758	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-10.43	Mean of logged Data	-8.105
Maximum of Logged Data	-6.327	SD of logged Data	0.592
Assuming Lognormal Distribution			
95% H-UCL	3.86E-04	90% Chebyshev (MVUE) UCL	4.04E-04
95% Chebyshev (MVUE) UCL	4.24E-04	97.5% Chebyshev (MVUE) UCL	4.52E-04
99% Chebyshev (MVUE) UCL	5.07E-04		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3.79E-04	95% Jackknife UCL	3.79E-04
95% Standard Bootstrap UCL	3.79E-04	95% Bootstrap-t UCL	3.82E-04
95% Hall's Bootstrap UCL	3.83E-04	95% Percentile Bootstrap UCL	3.80E-04
95% BCA Bootstrap UCL	3.81E-04		
90% Chebyshev(Mean, Sd) UCL	3.98E-04	95% Chebyshev(Mean, Sd) UCL	4.18E-04
97.5% Chebyshev(Mean, Sd) UCL	4.44E-04	99% Chebyshev(Mean, Sd) UCL	4.97E-04
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	4.18E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total heptachlorodibenzo-p-dioxin (hpcdd)***37871-00-4***t***ng/kg)			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	207
		Number of Missing Observations	0
Minimum	69.9	Mean	3080
Maximum	16000	Median	2740
SD	2243	Std. Error of Mean	144.5
Coefficient of Variation	0.728	Skewness	1.77
Normal GOF Test			
Shapiro Wilk Test Statistic	0.881	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0898	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	3318	95% Adjusted-CLT UCL (Chen-1995)	3335
		95% Modified-t UCL (Johnson-1978)	3321

Gamma GOF Test			
A-D Test Statistic	1.112	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.768	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0628	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0598	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.792	k star (bias corrected MLE)	1.773
Theta hat (MLE)	1718	Theta star (bias corrected MLE)	1737
nu hat (MLE)	863.8	nu star (bias corrected)	854.4
MLE Mean (bias corrected)	3080	MLE Sd (bias corrected)	2313
		Approximate Chi Square Value (0.05)	787.6
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	787.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	3341	95% Adjusted Gamma UCL (use when n<50)	3343
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.934	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	2.68E-14	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.102	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	4.247	Mean of logged Data	7.728
Maximum of Logged Data	9.68	SD of logged Data	0.885
Assuming Lognormal Distribution			
95% H-UCL	3781	90% Chebyshev (MVUE) UCL	4025
95% Chebyshev (MVUE) UCL	4329	97.5% Chebyshev (MVUE) UCL	4752
99% Chebyshev (MVUE) UCL	5581		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	3317	95% Jackknife UCL	3318
95% Standard Bootstrap UCL	3322	95% Bootstrap-t UCL	3343
95% Hall's Bootstrap UCL	3348	95% Percentile Bootstrap UCL	3320
95% BCA Bootstrap UCL	3341		
90% Chebyshev(Mean, Sd) UCL	3513	95% Chebyshev(Mean, Sd) UCL	3709
97.5% Chebyshev(Mean, Sd) UCL	3982	99% Chebyshev(Mean, Sd) UCL	4517
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	3709		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total hexachlorodibenzofuran (hxcdf)***55684-94-1***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	241
		Number of Missing Observations	0
Minimum	8.51E-06	Mean	1.83E-04
Maximum	0.00334	Median	9.87E-05
SD	2.74E-04	Std. Error of Mean	1.77E-05
Coefficient of Variation	1.501	Skewness	7.229
Normal GOF Test			
Shapiro Wilk Test Statistic	0.51	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.266	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2.12E-04	95% Adjusted-CLT UCL (Chen-1995)	2.21E-04
		95% Modified-t UCL (Johnson-1978)	2.13E-04
Gamma GOF Test			
A-D Test Statistic	5.522	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.779	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.125	Kolmogrov-Smirnoff Gamma GOF Test	

5% K-S Critical Value		0.0604 Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.194	k star (bias corrected MLE)	1.182
Theta hat (MLE)	1.53E-04	Theta star (bias corrected MLE)	1.55E-04
nu hat (MLE)	575.4	nu star (bias corrected)	569.6
MLE Mean (bias corrected)	1.83E-04	MLE Sd (bias corrected)	1.68E-04
		Approximate Chi Square Value (0.05)	515.2
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	514.9
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	2.02E-04	95% Adjusted Gamma UCL (use when n<50)	2.02E-04
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.985	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.681	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0671	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-11.67	Mean of logged Data	-9.081
Maximum of Logged Data	-5.702	SD of logged Data	0.921
Assuming Lognormal Distribution			
95% H-UCL	1.97E-04	90% Chebyshev (MVUE) UCL	2.10E-04
95% Chebyshev (MVUE) UCL	2.27E-04	97.5% Chebyshev (MVUE) UCL	2.50E-04
99% Chebyshev (MVUE) UCL	2.95E-04		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2.12E-04	95% Jackknife UCL	2.12E-04
95% Standard Bootstrap UCL	2.12E-04	95% Bootstrap-t UCL	2.25E-04
95% Hall's Bootstrap UCL	3.42E-04	95% Percentile Bootstrap UCL	2.13E-04
95% BCA Bootstrap UCL	2.21E-04		
90% Chebyshev(Mean, Sd) UCL	2.36E-04	95% Chebyshev(Mean, Sd) UCL	2.60E-04
97.5% Chebyshev(Mean, Sd) UCL	2.93E-04	99% Chebyshev(Mean, Sd) UCL	3.59E-04
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	2.60E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total hexachlorodibenzofuran (hxcdf)***55684-94-1***t***ng/kg)			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	206
		Number of Missing Observations	0
Minimum	21.3	Mean	1477
Maximum	19300	Median	995
SD	1899	Std. Error of Mean	122.3
Coefficient of Variation	1.286	Skewness	4.811
Normal GOF Test			
Shapiro Wilk Test Statistic	0.631	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.222	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1679	95% Adjusted-CLT UCL (Chen-1995)	1718
		95% Modified-t UCL (Johnson-1978)	1685
Gamma GOF Test			
A-D Test Statistic	1.306	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.783	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0712	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0606	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.053	k star (bias corrected MLE)	1.043

Theta hat (MLE)	1402	Theta star (bias corrected MLE)	1416
nu hat (MLE)	507.6	nu star (bias corrected)	502.6
MLE Mean (bias corrected)	1477	MLE Sd (bias corrected)	1446
		Approximate Chi Square Value (0.05)	451.6
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	451.3
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1643	95% Adjusted Gamma UCL (use when n<50)	1644
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.975	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0574	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0781	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.059	Mean of logged Data	6.753
Maximum of Logged Data	9.868	SD of logged Data	1.118
Assuming Lognormal Distribution			
95% H-UCL	1883	90% Chebyshev (MVUE) UCL	2027
95% Chebyshev (MVUE) UCL	2224	97.5% Chebyshev (MVUE) UCL	2497
99% Chebyshev (MVUE) UCL	3033		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1678	95% Jackknife UCL	1679
95% Standard Bootstrap UCL	1679	95% Bootstrap-t UCL	1738
95% Hall's Bootstrap UCL	1780	95% Percentile Bootstrap UCL	1680
95% BCA Bootstrap UCL	1720		
90% Chebyshev(Mean, Sd) UCL	1844	95% Chebyshev(Mean, Sd) UCL	2010
97.5% Chebyshev(Mean, Sd) UCL	2240	99% Chebyshev(Mean, Sd) UCL	2694
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	2010		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea****total hexachlorodibenzo-p-dioxin (hxcdd)***34465-46-8****t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	237
		Number of Missing Observations	0
Minimum	8.78E-06	Mean	9.54E-05
Maximum	0.0013	Median	7.07E-05
SD	1.15E-04	Std. Error of Mean	7.40E-06
Coefficient of Variation	N/A	Skewness	6.676
Normal GOF Test			
Shapiro Wilk Test Statistic	0.492	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.234	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.08E-04	95% Adjusted-CLT UCL (Chen-1995)	1.11E-04
		95% Modified-t UCL (Johnson-1978)	1.08E-04
Gamma GOF Test			
A-D Test Statistic	4.949	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.767	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.101	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0597	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.904	k star (bias corrected MLE)	1.883
Theta hat (MLE)	5.01E-05	Theta star (bias corrected MLE)	5.07E-05
nu hat (MLE)	917.9	nu star (bias corrected)	907.8
MLE Mean (bias corrected)	9.54E-05	MLE Sd (bias corrected)	6.95E-05
		Approximate Chi Square Value (0.05)	838.9
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	#####

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1.03E-04	95% Adjusted Gamma UCL (use when n<50)	1.03E-04
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.976	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0851	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0653	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-11.64	Mean of logged Data	-9.542
Maximum of Logged Data	-6.647	SD of logged Data	0.702
Assuming Lognormal Distribution			
95% H-UCL	1.00E-04	90% Chebyshev (MVUE) UCL	1.05E-04
95% Chebyshev (MVUE) UCL	1.12E-04	97.5% Chebyshev (MVUE) UCL	1.20E-04
99% Chebyshev (MVUE) UCL	1.38E-04		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1.08E-04	95% Jackknife UCL	1.08E-04
95% Standard Bootstrap UCL	1.08E-04	95% Bootstrap-t UCL	1.13E-04
95% Hall's Bootstrap UCL	1.18E-04	95% Percentile Bootstrap UCL	1.08E-04
95% BCA Bootstrap UCL	1.12E-04		
90% Chebyshev(Mean, Sd) UCL	1.18E-04	95% Chebyshev(Mean, Sd) UCL	1.28E-04
97.5% Chebyshev(Mean, Sd) UCL	1.42E-04	99% Chebyshev(Mean, Sd) UCL	1.69E-04
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1.28E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total hexachlorodibenzo-p-dioxin (hxcdd)***34465-46-8***t***ng/kg)			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	219
		Number of Missing Observations	0
Minimum	23.6	Mean	711.3
Maximum	4080	Median	611
SD	532.6	Std. Error of Mean	34.31
Coefficient of Variation	0.749	Skewness	2.48
Normal GOF Test			
Shapiro Wilk Test Statistic	0.829	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.127	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	767.9	95% Adjusted-CLT UCL (Chen-1995)	773.5
		95% Modified-t UCL (Johnson-1978)	768.8
Gamma GOF Test			
A-D Test Statistic	0.817	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.767	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0583	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0597	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.961	k star (bias corrected MLE)	1.94
Theta hat (MLE)	362.6	Theta star (bias corrected MLE)	366.7
nu hat (MLE)	945.4	nu star (bias corrected)	935
MLE Mean (bias corrected)	711.3	MLE Sd (bias corrected)	510.7
		Approximate Chi Square Value (0.05)	865
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	864.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	768.8	95% Adjusted Gamma UCL (use when n<50)	769.1
Lognormal GOF Test			

Shapiro Wilk Test Statistic	0.932	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	3.44E-15	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.108	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.161	Mean of logged Data	6.291
Maximum of Logged Data	8.314	SD of logged Data	0.831
Assuming Lognormal Distribution			
95% H-UCL	849.3	90% Chebyshev (MVUE) UCL	9.01E+02
95% Chebyshev (MVUE) UCL	965.1	97.5% Chebyshev (MVUE) UCL	1054
99% Chebyshev (MVUE) UCL	1227		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	767.7	95% Jackknife UCL	767.9
95% Standard Bootstrap UCL	768.5	95% Bootstrap-t UCL	773.7
95% Hall's Bootstrap UCL	778.2	95% Percentile Bootstrap UCL	770.8
95% BCA Bootstrap UCL	775.2		
90% Chebyshev(Mean, Sd) UCL	814.2	95% Chebyshev(Mean, Sd) UCL	860.8
97.5% Chebyshev(Mean, Sd) UCL	925.5	99% Chebyshev(Mean, Sd) UCL	1053
Suggested UCL to Use			
95% Approximate Gamma UCL	768.8		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total hpah (10 of 17) (km) (rl)***tpah_17_hm_km_rl****mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
Number of Detects	365	Number of Non-Detects	1
Number of Distinct Detects	365	Number of Distinct Non-Detects	1
Minimum Detect	0.747	Minimum Non-Detect	13.47
Maximum Detect	37.46	Maximum Non-Detect	13.47
Variance Detects	16	Percent Non-Detects	0.27%
Mean Detects	5.677	SD Detects	4.001
Median Detects	4.563	CV Detects	0.705
Skewness Detects	3.468	Kurtosis Detects	17.87
Mean of Logged Detects	1.58	SD of Logged Detects	0.529
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.71	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.171	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.675	Standard Error of Mean	0.209
SD	3.992	95% KM (BCA) UCL	6.039
95% KM (t) UCL	6.02	95% KM (Percentile Bootstrap) UCL	6.04
95% KM (z) UCL	6.019	95% KM Bootstrap t UCL	6.083
90% KM Chebyshev UCL	6.302	95% KM Chebyshev UCL	6.587
97.5% KM Chebyshev UCL	6.981	99% KM Chebyshev UCL	7.755
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.432	Anderson-Darling GOF Test	
5% A-D Critical Value	0.759	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.104	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0479	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	3.352	k star (bias corrected MLE)	3.326
Theta hat (MLE)	1.694	Theta star (bias corrected MLE)	1.707
nu hat (MLE)	2447	nu star (bias corrected)	2428
MLE Mean (bias corrected)	5.677	MLE Sd (bias corrected)	3.113
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.022	nu hat (KM)	1480
Approximate Chi Square Value (N/A, α)	1391	Adjusted Chi Square Value (N/A, β)	1391
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	6.036	95% Gamma Adjusted KM-UCL (use when $n < 50$)	6.037

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.747 Mean	5.675
Maximum	37.46 Median	4.574
SD	3.995 CV	0.704
k hat (MLE)	3.36 k star (bias corrected MLE)	3.334
Theta hat (MLE)	1.689 Theta star (bias corrected MLE)	1.702
nu hat (MLE)	2459 nu star (bias corrected)	2441
MLE Mean (bias corrected)	5.675 MLE Sd (bias corrected)	3.108
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	2327 Adjusted Chi Square Value (N/A, β)	2326
95% Gamma Approximate UCL (use when n>=50)	5.952 95% Gamma Adjusted UCL (use when n<50)	5.953
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0613 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	5.674 Mean in Log Scale	1.58
SD in Original Scale	3.995 SD in Log Scale	0.528
95% t UCL (assumes normality of ROS data)	6.019 95% Percentile Bootstrap UCL	6.03
95% BCA Bootstrap UCL	6.059 95% Bootstrap t UCL	6.051
95% H-UCL (Log ROS)	5.866	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	5.68 Mean in Log Scale	1.581
SD in Original Scale	3.995 SD in Log Scale	0.528
95% t UCL (Assumes normality)	6.024 95% H-Stat UCL	5.872
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	6.039	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total hpah (10 of 17) (km) (rl)***tpah_17_hm_km_rl***t***ug/kg)		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	363
Number of Detects	365 Number of Non-Detects	1
Number of Distinct Detects	362 Number of Distinct Non-Detects	1
Minimum Detect	1563 Minimum Non-Detect	149500
Maximum Detect	526120 Maximum Non-Detect	149500
Variance Detects	2.85E+09 Percent Non-Detects	0.27%
Mean Detects	52010 SD Detects	53337
Median Detects	41000 CV Detects	1.026
Skewness Detects	3.978 Kurtosis Detects	24.53
Mean of Logged Detects	10.51 SD of Logged Detects	0.848
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.683 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.185 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	51989 Standard Error of Mean	2787
SD	53216 95% KM (BCA) UCL	56921
95% KM (t) UCL	56585 95% KM (Percentile Bootstrap) UCL	56670
95% KM (z) UCL	56573 95% KM Bootstrap t UCL	57465
90% KM Chebyshev UCL	60349 95% KM Chebyshev UCL	64136
97.5% KM Chebyshev UCL	69392 99% KM Chebyshev UCL	79717
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.472 Anderson-Darling GOF Test	
5% A-D Critical Value	0.772 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0555 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0484 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.57 k star (bias corrected MLE)	1.559
Theta hat (MLE)	33121 Theta star (bias corrected MLE)	33356
nu hat (MLE)	1146 nu star (bias corrected)	1138
MLE Mean (bias corrected)	52010 MLE Sd (bias corrected)	41652
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.954 nu hat (KM)	698.6
Approximate Chi Square Value (698.64, α)	6.38E+02 Adjusted Chi Square Value (698.64, β)	638.1
95% Gamma Approximate KM-UCL (use when n>=50)	56903 95% Gamma Adjusted KM-UCL (use when n<50)	56923
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	1563 Mean	51971
Maximum	526120 Median	40801
SD	53270 CV	1.025
k hat (MLE)	1.574 k star (bias corrected MLE)	1.563
Theta hat (MLE)	33024 Theta star (bias corrected MLE)	33258
nu hat (MLE)	1152 nu star (bias corrected)	1144
MLE Mean (bias corrected)	51971 MLE Sd (bias corrected)	41575
	Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1066 Adjusted Chi Square Value (N/A, β)	1066
95% Gamma Approximate UCL (use when n>=50)	55749 95% Gamma Adjusted UCL (use when n<50)	55764
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0579 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0464 Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	51965 Mean in Log Scale	10.51
SD in Original Scale	53271 SD in Log Scale	0.846
95% t UCL (assumes normality of ROS data)	56556 95% Percentile Bootstrap UCL	56498
95% BCA Bootstrap UCL	57078 95% Bootstrap t UCL	57274
95% H-UCL (Log ROS)	57259	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	10.51 95% H-UCL (KM -Log)	57243
KM SD (logged)	0.846 95% Critical H Value (KM-Log)	2.008
KM Standard Error of Mean (logged)	0.0443	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	52073 Mean in Log Scale	10.51
SD in Original Scale	53277 SD in Log Scale	0.847
95% t UCL (Assumes normality)	56665 95% H-Stat UCL	57423
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	56921	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total lpah (7 of 17) (km) (rl)***tpah_17_lm_km_ri***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	366 Number of Distinct Observations	365
Number of Detects	355 Number of Non-Detects	11
Number of Distinct Detects	354 Number of Distinct Non-Detects	11
Minimum Detect	0.115 Minimum Non-Detect	2.269
Maximum Detect	57.23 Maximum Non-Detect	3.503
Variance Detects	13.96 Percent Non-Detects	3.01%
Mean Detects	1.655 SD Detects	3.736
Median Detects	0.873 CV Detects	2.257
Skewness Detects	10.5 Kurtosis Detects	142.7
Mean of Logged Detects	0.00845 SD of Logged Detects	0.789
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.314 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.351 Lilliefors GOF Test	

5% Lilliefors Critical Value	0.047	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1.634	Standard Error of Mean 0.193
SD	3.678	95% KM (BCA) UCL 1.992
95% KM (t) UCL	1.952	95% KM (Percentile Bootstrap) UCL 1.984
95% KM (z) UCL	1.951	95% KM Bootstrap t UCL 2.19
90% KM Chebyshev UCL	2.212	95% KM Chebyshev UCL 2.473
97.5% KM Chebyshev UCL	2.837	99% KM Chebyshev UCL 3.55
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	2.82E+28	Anderson-Darling GOF Test
5% A-D Critical Value	0.781	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.208	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.0496	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.147	k star (bias corrected MLE) 1.139
Theta hat (MLE)	1.443	Theta star (bias corrected MLE) 1.453
nu hat (MLE)	814.3	nu star (bias corrected) 808.8
MLE Mean (bias corrected)	1.655	MLE Sd (bias corrected) 1.551
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.197	nu hat (KM) 144.5
Approximate Chi Square Value (144.49, α)	117.7	Adjusted Chi Square Value (144.49, β) 117.6
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	2.006	95% Gamma Adjusted KM-UCL (use when $n < 50$) 2.007
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.115	Mean 1.625
Maximum	57.23	Median 0.856
SD	3.684	CV 2.268
k hat (MLE)	1.157	k star (bias corrected MLE) 1.149
Theta hat (MLE)	1.405	Theta star (bias corrected MLE) 1.414
nu hat (MLE)	846.6	nu star (bias corrected) 841
MLE Mean (bias corrected)	1.625	MLE Sd (bias corrected) 1.516
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (840.99, α)	774.7	Adjusted Chi Square Value (840.99, β) 774.4
95% Gamma Approximate UCL (use when $n \geq 50$)	1.764	95% Gamma Adjusted UCL (use when $n < 50$) 1.764
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.111	Lilliefors GOF Test
5% Lilliefors Critical Value	0.047	Detected Data Not Lognormal at 5% Significance Level
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	1.633	Mean in Log Scale 0.00555
SD in Original Scale	3.682	SD in Log Scale 0.777
95% t UCL (assumes normality of ROS data)	1.95	95% Percentile Bootstrap UCL 1.992
95% BCA Bootstrap UCL	2.072	95% Bootstrap t UCL 2.21
95% H-UCL (Log ROS)	1.473	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	1.647	Mean in Log Scale 0.0176
SD in Original Scale	3.68	SD in Log Scale 0.779
95% t UCL (Assumes normality)	1.964	95% H-Stat UCL 1.493
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	1.992	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total lpah (7 of 17) (km) (rl)***tpah_17_lm_km_rl***t***ug/kg)		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 363
Number of Detects	355	Number of Non-Detects 11
Number of Distinct Detects	3.53E+02	Number of Distinct Non-Detects 11

Minimum Detect	668.1	Minimum Non-Detect	22152
Maximum Detect	864952	Maximum Non-Detect	3.22E+04
Variance Detects	3.07E+09	Percent Non-Detects	3.01%
Mean Detects	17101	SD Detects	55421
Median Detects	6784	CV Detects	3.241
Skewness Detects	11.41	Kurtosis Detects	160.5
Mean of Logged Detects	8.932	SD of Logged Detects	1.018
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.258	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.383	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.047	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	16816	Standard Error of Mean	2855
SD	54537	95% KM (BCA) UCL	22009
95% KM (t) UCL	21524	95% KM (Percentile Bootstrap) UCL	21551
95% KM (z) UCL	21512	95% KM Bootstrap t UCL	26282
90% KM Chebyshev UCL	25381	95% KM Chebyshev UCL	29261
97.5% KM Chebyshev UCL	34646	99% KM Chebyshev UCL	45224
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	2.82E+28	Anderson-Darling GOF Test	
5% A-D Critical Value	0.799	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.2	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0503	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.736	k star (bias corrected MLE)	0.732
Theta hat (MLE)	23234	Theta star (bias corrected MLE)	23372
nu hat (MLE)	522.6	nu star (bias corrected)	519.5
MLE Mean (bias corrected)	17101	MLE Sd (bias corrected)	19992
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0951	nu hat (KM)	69.6
Approximate Chi Square Value (69.60, α)	51.39	Adjusted Chi Square Value (69.60, β)	51.33
95% Gamma Approximate KM-UCL (use when n>=50)	22773	95% Gamma Adjusted KM-UCL (use when n<50)	22800
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	288.5	Mean	16612
Maximum	864952	Median	6676
SD	54651	CV	3.29
k hat (MLE)	0.706	k star (bias corrected MLE)	0.702
Theta hat (MLE)	23539	Theta star (bias corrected MLE)	23672
nu hat (MLE)	516.6	nu star (bias corrected)	513.7
MLE Mean (bias corrected)	16612	MLE Sd (bias corrected)	19831
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (513.69, α)	462.1	Adjusted Chi Square Value (513.69, β)	461.9
95% Gamma Approximate UCL (use when n>=50)	18466	95% Gamma Adjusted UCL (use when n<50)	18474
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0721	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.047	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	16789	Mean in Log Scale	8.928
SD in Original Scale	54609	SD in Log Scale	1.002
95% t UCL (assumes normality of ROS data)	21496	95% Percentile Bootstrap UCL	21861
95% BCA Bootstrap UCL	24731	95% Bootstrap t UCL	25571
95% H-UCL (Log ROS)	13934		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	16980	Mean in Log Scale	8.948
SD in Original Scale	54585	SD in Log Scale	1.007
95% t UCL (Assumes normality)	21685	95% H-Stat UCL	14282
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			

95% KM (Chebyshev) UCL		29261	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total nondioxin-like pcb congener (km) (rl)***tndpcbcong_km_ri***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	237	Number of Distinct Observations	237
		Number of Missing Observations	0
Minimum	0.0133	Mean	0.576
Maximum	28.32	Median	0.224
SD	1.898	Std. Error of Mean	0.123
Coefficient of Variation	3.296	Skewness	13.43
Normal GOF Test			
Shapiro Wilk Test Statistic	0.221	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.383	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0576	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	0.78	95% Adjusted-CLT UCL (Chen-1995)	0.894
		95% Modified-t UCL (Johnson-1978)	0.797
Gamma GOF Test			
A-D Test Statistic	4.22E+28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.793	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.141	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0616	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.813	k star (bias corrected MLE)	0.806
Theta hat (MLE)	0.708	Theta star (bias corrected MLE)	0.715
nu hat (MLE)	385.5	nu star (bias corrected)	382
MLE Mean (bias corrected)	0.576	MLE Sd (bias corrected)	0.642
		Approximate Chi Square Value (0.05)	337.7
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	337.4
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	0.651	95% Adjusted Gamma UCL (use when n<50)	0.652
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.984	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.602	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0852	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0576	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-4.319	Mean of logged Data	-1.28
Maximum of Logged Data	3.344	SD of logged Data	1.057
Assuming Lognormal Distribution			
95% H-UCL	0.565	90% Chebyshev (MVUE) UCL	0.607
95% Chebyshev (MVUE) UCL	0.663	97.5% Chebyshev (MVUE) UCL	0.741
99% Chebyshev (MVUE) UCL	0.893		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	0.779	95% Jackknife UCL	0.78
95% Standard Bootstrap UCL	0.775	95% Bootstrap-t UCL	1.182
95% Hall's Bootstrap UCL	1.545	95% Percentile Bootstrap UCL	0.808
95% BCA Bootstrap UCL	0.956		
90% Chebyshev(Mean, Sd) UCL	0.946	95% Chebyshev(Mean, Sd) UCL	111.30%
97.5% Chebyshev(Mean, Sd) UCL	1.346	99% Chebyshev(Mean, Sd) UCL	1.803
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	1.113		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.			

For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total nondioxin-like pcb congener (km) (rl)***tndpcbcong_km_ri***t***ng/kg)

General Statistics			
Total Number of Observations	237	Number of Distinct Observations	237
		Number of Missing Observations	0
Minimum	24763	Mean	6037152
Maximum	3.71E+08	Median	1783569
SD	24802891	Std. Error of Mean	1611121
Coefficient of Variation	4.108	Skewness	13.69
Normal GOF Test			
Shapiro Wilk Test Statistic	0.198	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.404	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0576	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	8697654	95% Adjusted-CLT UCL (Chen-1995)	10217921
		95% Modified-t UCL (Johnson-1978)	8936414
Gamma GOF Test			
A-D Test Statistic	4.22E+28	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.813	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.138	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0625	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	0.583	k star (bias corrected MLE)	0.579
Theta hat (MLE)	10352510	Theta star (bias corrected MLE)	10434258
nu hat (MLE)	276.4	nu star (bias corrected)	274.3
MLE Mean (bias corrected)	6037152	MLE Sd (bias corrected)	7936826
		Approximate Chi Square Value (0.05)	236.9
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	236.7
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	6989050	95% Adjusted Gamma UCL (use when n<50)	6995255
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.981	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.315	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0906	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0576	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	10.12	Mean of logged Data	14.55
Maximum of Logged Data	19.73	SD of logged Data	1.313
Assuming Lognormal Distribution			
95% H-UCL	6078726	90% Chebyshev (MVUE) UCL	6585599
95% Chebyshev (MVUE) UCL	7348361	97.5% Chebyshev (MVUE) UCL	8407045
99% Chebyshev (MVUE) UCL	10486625		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	8687211	95% Jackknife UCL	8697654
95% Standard Bootstrap UCL	8661328	95% Bootstrap-t UCL	14659378
95% Hall's Bootstrap UCL	18445106	95% Percentile Bootstrap UCL	9175749
95% BCA Bootstrap UCL	11142706		
90% Chebyshev(Mean, Sd) UCL	10870515	95% Chebyshev(Mean, Sd) UCL	13059866
97.5% Chebyshev(Mean, Sd) UCL	16098599	99% Chebyshev(Mean, Sd) UCL	22067603
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	13059866		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total pah (17) (km) (rl)***tpah_17_km_ri***t***mg/kg (at 1% toc))

General Statistics

Total Number of Observations	366	Number of Distinct Observations	366
Number of Detects	362	Number of Non-Detects	4
Number of Distinct Detects	362	Number of Distinct Non-Detects	4
Minimum Detect	8.62E-01	Minimum Non-Detect	754.30%
Maximum Detect	82.27	Maximum Non-Detect	9.55
Variance Detects	60.54	Percent Non-Detects	1.09%
Mean Detects	7.517	SD Detects	7.781
Median Detects	5.548	CV Detects	1.035
Skewness Detects	5.608	Kurtosis Detects	42.47
Mean of Logged Detects	1.791	SD of Logged Detects	0.596
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.53	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.234	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.488	Standard Error of Mean	0.405
SD	7.734	95% KM (BCA) UCL	8.248
95% KM (t) UCL	8.156	95% KM (Percentile Bootstrap) UCL	8.172
95% KM (z) UCL	8.154	95% KM Bootstrap t UCL	8.325
90% KM Chebyshev UCL	8.703	95% KM Chebyshev UCL	9.253
97.5% KM Chebyshev UCL	10.02	99% KM Chebyshev UCL	11.52
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	13.64	Anderson-Darling GOF Test	
5% A-D Critical Value	0.764	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.139	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0483	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.367	k star (bias corrected MLE)	2.349
Theta hat (MLE)	3.176	Theta star (bias corrected MLE)	3.2
nu hat (MLE)	1714	nu star (bias corrected)	1701
MLE Mean (bias corrected)	7.517	MLE Sd (bias corrected)	4.904
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.937	nu hat (KM)	686.2
Approximate Chi Square Value (686.19, α)	626.4	Adjusted Chi Square Value (686.19, β)	626.2
95% Gamma Approximate KM-UCL (use when n>=50)	8.203	95% Gamma Adjusted KM-UCL (use when n<50)	8.205
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.862	Mean	7.483
Maximum	82.27	Median	5.506
SD	7.745	CV	1.035
k hat (MLE)	2.379	k star (bias corrected MLE)	2.361
Theta hat (MLE)	3.146	Theta star (bias corrected MLE)	3.169
nu hat (MLE)	1741	nu star (bias corrected)	1728
MLE Mean (bias corrected)	7.483	MLE Sd (bias corrected)	4.87
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (N/A, α)	1633	Adjusted Chi Square Value (N/A, β)	1632
95% Gamma Approximate UCL (use when n>=50)	7.921	95% Gamma Adjusted UCL (use when n<50)	7.923
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0873	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0466	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.489	Mean in Log Scale	1.789
SD in Original Scale	7.742	SD in Log Scale	0.593
95% t UCL (assumes normality of ROS data)	8.157	95% Percentile Bootstrap UCL	8.188
95% BCA Bootstrap UCL	8.298	95% Bootstrap t UCL	8.308
95% H-UCL (Log ROS)	7.555		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.48	Mean in Log Scale	1.787
SD in Original Scale	7.746	SD in Log Scale	0.594
95% t UCL (Assumes normality)	8.148	95% H-Stat UCL	7.545
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use		
95% KM (BCA) UCL	8.248	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total pah (17) (km) (rl)**tpah_17_km_rl***t***ug/kg)		
General Statistics		
Total Number of Observations	366	Number of Distinct Observations 366
Number of Detects	362	Number of Non-Detects 4
Number of Distinct Detects	362	Number of Distinct Non-Detects 4
Minimum Detect	2231	Minimum Non-Detect 68967
Maximum Detect	1219880	Maximum Non-Detect 87743
Variance Detects	1.21E+10	Percent Non-Detects 1.09%
Mean Detects	71691	SD Detects 109814
Median Detects	48051	CV Detects 1.532
Skewness Detects	6.328	Kurtosis Detects 52.1
Mean of Logged Detects	10.72	SD of Logged Detects 0.9
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.476	Normal GOF Test on Detected Observations Only
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.268	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	71303	Standard Error of Mean 5714
SD	109143	95% KM (BCA) UCL 80992
95% KM (t) UCL	80726	95% KM (Percentile Bootstrap) UCL 80916
95% KM (z) UCL	80702	95% KM Bootstrap t UCL 84473
90% KM Chebyshev UCL	88445	95% KM Chebyshev UCL 96210
97.5% KM Chebyshev UCL	106987	99% KM Chebyshev UCL 128156
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	7.561	Anderson-Darling GOF Test
5% A-D Critical Value	0.779	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0982	Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.049	Detected Data Not Gamma Distributed at 5% Significance Level
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	1.227	k star (bias corrected MLE) 1.218
Theta hat (MLE)	58446	Theta star (bias corrected MLE) 58845
nu hat (MLE)	888.1	nu star (bias corrected) 882.1
MLE Mean (bias corrected)	71691	MLE Sd (bias corrected) 64951
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	0.427	nu hat (KM) 312.4
Approximate Chi Square Value (312.42, α)	272.5	Adjusted Chi Square Value (312.42, β) 272.3
95% Gamma Approximate KM-UCL (use when n>=50)	81757	95% Gamma Adjusted KM-UCL (use when n<50) 81801
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	2231	Mean 71148
Maximum	1219880	Median 47011
SD	109333	CV 1.537
k hat (MLE)	1.226	k star (bias corrected MLE) 1.217
Theta hat (MLE)	58047	Theta star (bias corrected MLE) 58439
nu hat (MLE)	897.2	nu star (bias corrected) 891.2
MLE Mean (bias corrected)	71148	MLE Sd (bias corrected) 64481
		Adjusted Level of Significance (β) 0.0493
Approximate Chi Square Value (891.20, α)	822.9	Adjusted Chi Square Value (891.20, β) 822.7
95% Gamma Approximate UCL (use when n>=50)	77052	95% Gamma Adjusted UCL (use when n<50) 77076
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0373	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0466	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	71270	Mean in Log Scale 10.72
SD in Original Scale	109284	SD in Log Scale 0.896
95% t UCL (assumes normality of ROS data)	80690	95% Percentile Bootstrap UCL 81571

95% BCA Bootstrap UCL	83394	95% Bootstrap t UCL	83730
95% H-UCL (Log ROS)	74157		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	10.72	95% H-UCL (KM -Log)	74210
KM SD (logged)	0.898	95% Critical H Value (KM-Log)	2.047
KM Standard Error of Mean (logged)	0.0471		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	71326	Mean in Log Scale	10.72
SD in Original Scale	109267	SD in Log Scale	0.896
95% t UCL (Assumes normality)	80744	95% H-Stat UCL	74241
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	80992		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total pcb (aroclor*1.75 and congener)***tpcb_cong_aro175***t***mg/kg)			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
Number of Detects	363	Number of Non-Detects	3
Number of Distinct Detects	363	Number of Distinct Non-Detects	3
Minimum Detect	0.0259	Minimum Non-Detect	0.683
Maximum Detect	375.5	Maximum Non-Detect	14.57
Variance Detects	487.9	Percent Non-Detects	0.82%
Mean Detects	7.422	SD Detects	22.09
Median Detects	2.231	CV Detects	2.976
Skewness Detects	13.25	Kurtosis Detects	214.8
Mean of Logged Detects	0.954	SD of Logged Detects	1.384
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.298	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.369	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0465	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.373	Standard Error of Mean	1.15
SD	21.97	95% KM (BCA) UCL	9.873
95% KM (t) UCL	9.27	95% KM (Percentile Bootstrap) UCL	9.49
95% KM (z) UCL	9.265	95% KM Bootstrap t UCL	11.11
90% KM Chebyshev UCL	10.82	95% KM Chebyshev UCL	12.39
97.5% KM Chebyshev UCL	14.56	99% KM Chebyshev UCL	18.82
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	13.76	Anderson-Darling GOF Test	
5% A-D Critical Value	0.814	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.138	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0502	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.59	k star (bias corrected MLE)	0.587
Theta hat (MLE)	12.58	Theta star (bias corrected MLE)	12.65
nu hat (MLE)	428.2	nu star (bias corrected)	426
MLE Mean (bias corrected)	7.422	MLE Sd (bias corrected)	9.689
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.113	nu hat (KM)	82.41
Approximate Chi Square Value (82.41, α)	62.49	Adjusted Chi Square Value (82.41, β)	62.42
95% Gamma Approximate KM-UCL (use when n>=50)	9.723	95% Gamma Adjusted KM-UCL (use when n<50)	9.734
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	7.361
Maximum	375.5	Median	2.156
SD	22.01	CV	2.99

k hat (MLE)	0.572	k star (bias corrected MLE)	0.569
Theta hat (MLE)	12.87	Theta star (bias corrected MLE)	12.93
nu hat (MLE)	418.8	nu star (bias corrected)	416.7
MLE Mean (bias corrected)	7.361	MLE Sd (bias corrected)	9.757
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (416.71, α)	370.4	Adjusted Chi Square Value (416.71, β)	370.2
95% Gamma Approximate UCL (use when n>=50)	8.282	95% Gamma Adjusted UCL (use when n<50)	8.286
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0964	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0465	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.37	Mean in Log Scale	0.945
SD in Original Scale	22	SD in Log Scale	1.383
95% t UCL (assumes normality of ROS data)	9.267	95% Percentile Bootstrap UCL	9.601
95% BCA Bootstrap UCL	10.81	95% Bootstrap t UCL	11.17
95% H-UCL (Log ROS)	8.005		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.384	Mean in Log Scale	0.948
SD in Original Scale	22	SD in Log Scale	1.385
95% t UCL (Assumes normality)	9.28	95% H-Stat UCL	8.05
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	12.39		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total pcb (aroclor*1.75 and congener)**tpcb_cong_aro175***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
Number of Detects	363	Number of Non-Detects	3
Number of Distinct Detects	363	Number of Distinct Non-Detects	3
Minimum Detect	0.0142	Minimum Non-Detect	0.177
Maximum Detect	2.87E+01	Maximum Non-Detect	1.558
Variance Detects	2.951	Percent Non-Detects	0.82%
Mean Detects	0.715	SD Detects	1.718
Median Detects	0.27	CV Detects	2.403
Skewness Detects	12.42	Kurtosis Detects	195.3
Mean of Logged Detects	-1.07	SD of Logged Detects	1.13
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.338	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.342	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0465	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.711	Standard Error of Mean	0.0895
SD	1.709	95% KM (BCA) UCL	0.871
95% KM (t) UCL	0.858	95% KM (Percentile Bootstrap) UCL	0.874
95% KM (z) UCL	0.858	95% KM Bootstrap t UCL	0.984
90% KM Chebyshev UCL	0.979	95% KM Chebyshev UCL	1.101
97.5% KM Chebyshev UCL	1.27	99% KM Chebyshev UCL	1.601
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	13.24	Anderson-Darling GOF Test	
5% A-D Critical Value	0.794	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.151	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0495	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.808	k star (bias corrected MLE)	0.803
Theta hat (MLE)	0.885	Theta star (bias corrected MLE)	0.891
nu hat (MLE)	586.3	nu star (bias corrected)	582.8
MLE Mean (bias corrected)	0.715	MLE Sd (bias corrected)	0.798
Gamma Kaplan-Meier (KM) Statistics			

k hat (KM)	0.173	nu hat (KM)	126.6
Approximate Chi Square Value (126.64, α)	101.7	Adjusted Chi Square Value (126.64, β)	101.6
95% Gamma Approximate KM-UCL (use when n>=50)	0.886	95% Gamma Adjusted KM-UCL (use when n<50)	0.886
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.71
Maximum	28.67	Median	0.267
SD	1.712	CV	2.412
k hat (MLE)	0.794	k star (bias corrected MLE)	0.79
Theta hat (MLE)	0.893	Theta star (bias corrected MLE)	0.898
nu hat (MLE)	581.6	nu star (bias corrected)	578.1
MLE Mean (bias corrected)	0.71	MLE Sd (bias corrected)	0.798
		Adjusted Level of Significance (β)	0.0493
Approximate Chi Square Value (578.13, α)	523.4	Adjusted Chi Square Value (578.13, β)	523.2
95% Gamma Approximate UCL (use when n>=50)	0.784	95% Gamma Adjusted UCL (use when n<50)	0.784
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.098	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0465	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.711	Mean in Log Scale	-1.075
SD in Original Scale	1.711	SD in Log Scale	1.128
95% t UCL (assumes normality of ROS data)	0.858	95% Percentile Bootstrap UCL	0.865
95% BCA Bootstrap UCL	0.95	95% Bootstrap t UCL	0.99
95% H-UCL (Log ROS)	0.735		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.712	Mean in Log Scale	-1.073
SD in Original Scale	1.711	SD in Log Scale	1.129
95% t UCL (Assumes normality)	0.859	95% H-Stat UCL	0.738
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	1.101		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total pcb congener teq 1998 (avian) (km) (rl)***tpcbngcpb98_km_ri***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	237	Number of Distinct Observations	237
Number of Detects	236	Number of Non-Detects	1
Number of Distinct Detects	236	Number of Distinct Non-Detects	1
Minimum Detect	1.63E-06	Minimum Non-Detect	5.59E-06
Maximum Detect	5.58E-04	Maximum Non-Detect	5.59E-06
Variance Detects	6.01E-09	Percent Non-Detects	0.42%
Mean Detects	7.53E-05	SD Detects	7.76E-05
Median Detects	5.06E-05	CV Detects	N/A
Skewness Detects	2.435	Kurtosis Detects	8.477
Mean of Logged Detects	-9.966	SD of Logged Detects	1.045
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.77	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.192	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0577	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	7.50E-05	Standard Error of Mean	5.04E-06
SD	7.74E-05	95% KM (BCA) UCL	8.34E-05
95% KM (t) UCL	8.33E-05	95% KM (Percentile Bootstrap) UCL	8.35E-05
95% KM (z) UCL	8.32E-05	95% KM Bootstrap t UCL	8.40E-05
90% KM Chebyshev UCL	9.01E-05	95% KM Chebyshev UCL	9.69E-05
97.5% KM Chebyshev UCL	1.06E-04	99% KM Chebyshev UCL	1.25E-04
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.303	Anderson-Darling GOF Test	

5% A-D Critical Value	0.779	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.082	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.061	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.199	k star (bias corrected MLE)	1.186
Theta hat (MLE)	6.28E-05	Theta star (bias corrected MLE)	6.34E-05
nu hat (MLE)	565.8	nu star (bias corrected)	559.9
MLE Mean (bias corrected)	7.53E-05	MLE Sd (bias corrected)	6.91E-05
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.939	nu hat (KM)	445
Approximate Chi Square Value (444.99, α)	397.1	Adjusted Chi Square Value (444.99, β)	396.8
95% Gamma Approximate KM-UCL (use when n>=50)	8.40E-05	95% Gamma Adjusted KM-UCL (use when n<50)	8.41E-05
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	1.63E-06	Mean	1.17E-04
Maximum	0.01	Median	5.06E-05
SD	6.49E-04	CV	5.543
k hat (MLE)	0.68	k star (bias corrected MLE)	0.675
Theta hat (MLE)	1.72E-04	Theta star (bias corrected MLE)	1.74E-04
nu hat (MLE)	322.5	nu star (bias corrected)	319.8
MLE Mean (bias corrected)	1.17E-04	MLE Sd (bias corrected)	1.43E-04
		Adjusted Level of Significance (β)	0.049
Approximate Chi Square Value (319.79, α)	279.4	Adjusted Chi Square Value (319.79, β)	279.1
95% Gamma Approximate UCL (use when n>=50)	1.34E-04	95% Gamma Adjusted UCL (use when n<50)	1.34E-04
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0878	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0577	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	7.50E-05	Mean in Log Scale	-9.976
SD in Original Scale	7.75E-05	SD in Log Scale	1.053
95% t UCL (assumes normality of ROS data)	8.33E-05	95% Percentile Bootstrap UCL	8.34E-05
95% BCA Bootstrap UCL	8.44E-05	95% Bootstrap t UCL	8.45E-05
95% H-UCL (Log ROS)	9.41E-05		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	7.50E-05	Mean in Log Scale	-9.978
SD in Original Scale	7.75E-05	SD in Log Scale	1.058
95% t UCL (Assumes normality)	8.33E-05	95% H-Stat UCL	9.45E-05
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	9.69E-05		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total pcb congener teq 1998 (avian) (km) (rl)***tpcbcngcpb98_km_ri***t***ng/kg)			
General Statistics			
Total Number of Observations	237	Number of Distinct Observations	237
Number of Detects	236	Number of Non-Detects	1
Number of Distinct Detects	236	Number of Distinct Non-Detects	1
Minimum Detect	11.68	Minimum Non-Detect	5.701
Maximum Detect	6582	Maximum Non-Detect	5.701
Variance Detects	932131	Percent Non-Detects	0.42%
Mean Detects	708.1	SD Detects	965.5
Median Detects	280.5	CV Detects	1.363
Skewness Detects	2.89	Kurtosis Detects	10.65
Mean of Logged Detects	5.871	SD of Logged Detects	1.196
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.668	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.235	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0577	Detected Data Not Normal at 5% Significance Level	

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	705.1	Standard Error of Mean	62.65
SD	962.5	95% KM (BCA) UCL	817
95% KM (t) UCL	808.6	95% KM (Percentile Bootstrap) UCL	809.7
95% KM (z) UCL	808.2	95% KM Bootstrap t UCL	826.8
90% KM Chebyshev UCL	893.1	95% KM Chebyshev UCL	978.2
97.5% KM Chebyshev UCL	1096	99% KM Chebyshev UCL	1329

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	5.857	Anderson-Darling GOF Test	
5% A-D Critical Value	0.791	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.15	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0616	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	0.852	k star (bias corrected MLE)	0.844
Theta hat (MLE)	831.5	Theta star (bias corrected MLE)	839.4
nu hat (MLE)	402	nu star (bias corrected)	398.2
MLE Mean (bias corrected)	708.1	MLE Sd (bias corrected)	770.9

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.537	nu hat (KM)	254.4
Approximate Chi Square Value (254.43, α)	218.5	Adjusted Chi Square Value (254.43, β)	218.3
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	821.1	95% Gamma Adjusted KM-UCL (use when $n < 50$)	821.9

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	705.1
Maximum	6582	Median	276.4
SD	964.5	CV	1.368
k hat (MLE)	0.81	k star (bias corrected MLE)	0.803
Theta hat (MLE)	870.2	Theta star (bias corrected MLE)	878.3
nu hat (MLE)	384.1	nu star (bias corrected)	380.5
MLE Mean (bias corrected)	705.1	MLE Sd (bias corrected)	787
		Adjusted Level of Significance (β)	0.049
Approximate Chi Square Value (380.54, α)	336.3	Adjusted Chi Square Value (380.54, β)	336.1
95% Gamma Approximate UCL (use when $n \geq 50$)	797.8	95% Gamma Adjusted UCL (use when $n < 50$)	798.4

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0914	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0577	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	705.2	Mean in Log Scale	5.856
SD in Original Scale	964.5	SD in Log Scale	1.215
95% t UCL (assumes normality of ROS data)	808.6	95% Percentile Bootstrap UCL	816
95% BCA Bootstrap UCL	811.8	95% Bootstrap t UCL	819.3
95% H-UCL (Log ROS)	879.7		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	705.1	Mean in Log Scale	5.851
SD in Original Scale	964.5	SD in Log Scale	1.233
95% t UCL (Assumes normality)	808.6	95% H-Stat UCL	899.1
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			

Suggested UCL to Use			
95% KM (Chebyshev) UCL	978.2		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total pcb congener teq 1998 (fish) (km) (rl)***tpcbngcpf98_km_rl***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	237	Number of Distinct Observations	237
Number of Detects	220	Number of Non-Detects	17
Number of Distinct Detects	220	Number of Distinct Non-Detects	17
Minimum Detect	3.67E-08	Minimum Non-Detect	2.55E-08

Maximum Detect	4.61E-06	Maximum Non-Detect	1.11E-06
Variance Detects	4.58E-13	Percent Non-Detects	7.17%
Mean Detects	6.21E-07	SD Detects	6.77E-07
Median Detects	3.56E-07	CV Detects	N/A
Skewness Detects	2.853	Kurtosis Detects	10.99
Mean of Logged Detects	-14.72	SD of Logged Detects	0.912
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.71	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.199	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0597	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.86E-07	Standard Error of Mean	4.32E-08
SD	6.64E-07	95% KM (BCA) UCL	6.59E-07
95% KM (t) UCL	6.57E-07	95% KM (Percentile Bootstrap) UCL	6.57E-07
95% KM (z) UCL	6.57E-07	95% KM Bootstrap t UCL	6.69E-07
90% KM Chebyshev UCL	7.16E-07	95% KM Chebyshev UCL	7.74E-07
97.5% KM Chebyshev UCL	8.56E-07	99% KM Chebyshev UCL	1.02E-06
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	3.585	Anderson-Darling GOF Test	
5% A-D Critical Value	0.776	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.126	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0627	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.319	k star (bias corrected MLE)	1.304
Theta hat (MLE)	4.71E-07	Theta star (bias corrected MLE)	4.77E-07
nu hat (MLE)	580.4	nu star (bias corrected)	573.8
MLE Mean (bias corrected)	6.21E-07	MLE Sd (bias corrected)	5.44E-07
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.78	nu hat (KM)	369.8
Approximate Chi Square Value (369.79, α)	326.2	Adjusted Chi Square Value (369.79, β)	326
95% Gamma Approximate KM-UCL (use when n>=50)	6.64E-07	95% Gamma Adjusted KM-UCL (use when n<50)	6.65E-07
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	3.67E-08	Mean	7.18E-04
Maximum	0.01	Median	3.85E-07
SD	0.00259	CV	3.602
k hat (MLE)	0.118	k star (bias corrected MLE)	0.119
Theta hat (MLE)	0.0061	Theta star (bias corrected MLE)	0.00603
nu hat (MLE)	55.82	nu star (bias corrected)	56.44
MLE Mean (bias corrected)	7.18E-04	MLE Sd (bias corrected)	0.00208
		Adjusted Level of Significance (β)	0.049
Approximate Chi Square Value (56.44, α)	40.18	Adjusted Chi Square Value (56.44, β)	40.09
95% Gamma Approximate UCL (use when n>=50)	0.00101	95% Gamma Adjusted UCL (use when n<50)	0.00101
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0699	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0597	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	5.86E-07	Mean in Log Scale	-14.81
SD in Original Scale	6.65E-07	SD in Log Scale	0.964
95% t UCL (assumes normality of ROS data)	6.57E-07	95% Percentile Bootstrap UCL	6.59E-07
95% BCA Bootstrap UCL	6.61E-07	95% Bootstrap t UCL	6.71E-07
95% H-UCL (Log ROS)	6.69E-07		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-14.82	95% H-UCL (KM -Log)	6.81E-07
KM SD (logged)	0.987	95% Critical H Value (KM-Log)	2.143
KM Standard Error of Mean (logged)	0.065		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.86E-07	Mean in Log Scale	-14.83
SD in Original Scale	6.65E-07	SD in Log Scale	1.003
95% t UCL (Assumes normality)	6.57E-07	95% H-Stat UCL	6.90E-07
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use
95% KM (BCA) UCL6.59E-07

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total pcb congener teq 1998 (fish) (km) (rl)***tpcbngcpf98_km_ri***t***ng/kg)

General Statistics			
Total Number of Observations	237	Number of Distinct Observations	237
Number of Detects	220	Number of Non-Detects	17
Number of Distinct Detects	220	Number of Distinct Non-Detects	17
Minimum Detect	0.321	Minimum Non-Detect	0.163
Maximum Detect	64.71	Maximum Non-Detect	2.09
Variance Detects	76.29	Percent Non-Detects	7.17%
Mean Detects	6.162	SD Detects	8.734
Median Detects	3.06E+00	CV Detects	1.417
Skewness Detects	3.635	Kurtosis Detects	17.63
Mean of Logged Detects	1.167	SD of Logged Detects	1.129
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.626	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.252	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0597	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.753	Standard Error of Mean	0.555
SD	8.525	95% KM (BCA) UCL	6.771
95% KM (t) UCL	6.67	95% KM (Percentile Bootstrap) UCL	6.71
95% KM (z) UCL	6.666	95% KM Bootstrap t UCL	6.838
90% KM Chebyshev UCL	7.418	95% KM Chebyshev UCL	8.172
97.5% KM Chebyshev UCL	9.219	99% KM Chebyshev UCL	11.28
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	4.93	Anderson-Darling GOF Test	
5% A-D Critical Value	0.789	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.116	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0634	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.898	k star (bias corrected MLE)	0.888
Theta hat (MLE)	6.866	Theta star (bias corrected MLE)	6.937
nu hat (MLE)	394.9	nu star (bias corrected)	390.9
MLE Mean (bias corrected)	6.162	MLE Sd (bias corrected)	6.538
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.455	nu hat (KM)	215.9
Approximate Chi Square Value (215.86, α)	182.9	Adjusted Chi Square Value (215.86, β)	182.7
95% Gamma Approximate KM-UCL (use when n>=50)	6.791	95% Gamma Adjusted KM-UCL (use when n<50)	6.798
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	5.721
Maximum	64.71	Median	2.56
SD	8.563	CV	1.497
k hat (MLE)	0.62	k star (bias corrected MLE)	0.615
Theta hat (MLE)	9.223	Theta star (bias corrected MLE)	9.299
nu hat (MLE)	294	nu star (bias corrected)	291.6
MLE Mean (bias corrected)	5.721	MLE Sd (bias corrected)	7.294
		Adjusted Level of Significance (β)	0.049
Approximate Chi Square Value (291.63, α)	253.1	Adjusted Chi Square Value (291.63, β)	252.9
95% Gamma Approximate UCL (use when n>=50)	6.593	95% Gamma Adjusted UCL (use when n<50)	6.598
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0881	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0597	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	5.753	Mean in Log Scale	1.012
SD in Original Scale	8.543	SD in Log Scale	1.233

95% t UCL (assumes normality of ROS data)	6.669	95% Percentile Bootstrap UCL	6.718
95% BCA Bootstrap UCL	6.845	95% Bootstrap t UCL	6.83
95% H-UCL (Log ROS)	7.116		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.748	Mean in Log Scale	0.999
SD in Original Scale	8.546	SD in Log Scale	1.259
95% t UCL (Assumes normality)	6.665	95% H-Stat UCL	7.295
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	8.172		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total pcb congener teq 2005 (mammal) (km) (rl)***tpcbcongcpm_km_rl***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	237	Number of Distinct Observations	237
Number of Detects	217	Number of Non-Detects	20
Number of Distinct Detects	217	Number of Distinct Non-Detects	20
Minimum Detect	5.42E-07	Minimum Non-Detect	3.68E-07
Maximum Detect	2.61E-04	Maximum Non-Detect	1.88E-05
Variance Detects	3.64E-10	Percent Non-Detects	8.44%
Mean Detects	8.59E-06	SD Detects	1.91E-05
Median Detects	4.30E-06	CV Detects	N/A
Skewness Detects	11.06	Kurtosis Detects	143.4
Mean of Logged Detects	-12.2	SD of Logged Detects	0.923
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.319	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.337	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0601	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	8.02E-06	Standard Error of Mean	1.19E-06
SD	1.83E-05	95% KM (BCA) UCL	1.01E-05
95% KM (t) UCL	9.99E-06	95% KM (Percentile Bootstrap) UCL	1.02E-05
95% KM (z) UCL	9.98E-06	95% KM Bootstrap t UCL	1.25E-05
90% KM Chebyshev UCL	1.16E-05	95% KM Chebyshev UCL	1.32E-05
97.5% KM Chebyshev UCL	1.55E-05	99% KM Chebyshev UCL	1.99E-05
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	6.237	Anderson-Darling GOF Test	
5% A-D Critical Value	0.782	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.121	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0634	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.067	k star (bias corrected MLE)	1.056
Theta hat (MLE)	8.05E-06	Theta star (bias corrected MLE)	8.14E-06
nu hat (MLE)	463.2	nu star (bias corrected)	458.1
MLE Mean (bias corrected)	8.59E-06	MLE Sd (bias corrected)	8.36E-06
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.192	nu hat (KM)	90.97
Approximate Chi Square Value (90.97, α)	69.98	Adjusted Chi Square Value (90.97, β)	69.87
95% Gamma Approximate KM-UCL (use when n>=50)	1.04E-05	95% Gamma Adjusted KM-UCL (use when n<50)	1.04E-05
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	5.42E-07	Mean	8.52E-04
Maximum	0.01	Median	5.15E-06
SD	0.00278	CV	3.268
k hat (MLE)	0.168	k star (bias corrected MLE)	0.169
Theta hat (MLE)	0.00506	Theta star (bias corrected MLE)	0.00504
nu hat (MLE)	79.73	nu star (bias corrected)	80.06
MLE Mean (bias corrected)	8.52E-04	MLE Sd (bias corrected)	0.00207

	Adjusted Level of Significance (β)	0.049
Approximate Chi Square Value (80.06, α)	60.44 Adjusted Chi Square Value (80.06, β)	60.34
95% Gamma Approximate UCL (use when $n \geq 50$)	0.00113 95% Gamma Adjusted UCL (use when $n < 50$)	0.00113
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0689 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0601 Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	8.01E-06 Mean in Log Scale	-12.31
SD in Original Scale	1.83E-05 SD in Log Scale	0.969
95% t UCL (assumes normality of ROS data)	9.98E-06 95% Percentile Bootstrap UCL	1.03E-05
95% BCA Bootstrap UCL	1.13E-05 95% Bootstrap t UCL	1.22E-05
95% H-UCL (Log ROS)	8.26E-06	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	-12.31 95% H-UCL (KM -Log)	8.35E-06
KM SD (logged)	0.982 95% Critical H Value (KM-Log)	2.138
KM Standard Error of Mean (logged)	0.0648	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	8.02E-06 Mean in Log Scale	-12.32
SD in Original Scale	1.84E-05 SD in Log Scale	1.006
95% t UCL (Assumes normality)	9.99E-06 95% H-Stat UCL	8.51E-06
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Approximate Lognormal Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (BCA) UCL	1.01E-05	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total pcb congener teq 2005 (mammal) (km) (rl)***tpcbcongcpm_km_rl***t***ng/kg)		
General Statistics		
Total Number of Observations	237 Number of Distinct Observations	237
Number of Detects	217 Number of Non-Detects	20
Number of Distinct Detects	217 Number of Distinct Non-Detects	20
Minimum Detect	3.42 Minimum Non-Detect	2.942
Maximum Detect	3418 Maximum Non-Detect	140.5
Variance Detects	62775 Percent Non-Detects	8.44%
Mean Detects	87.94 SD Detects	250.5
Median Detects	41.15 CV Detects	2.849
Skewness Detects	11.31 Kurtosis Detects	146.7
Mean of Logged Detects	3.678 SD of Logged Detects	1.158
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.28 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.368 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0601 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	81.23 Standard Error of Mean	15.64
SD	240.2 95% KM (BCA) UCL	109.4
95% KM (t) UCL	107.1 95% KM (Percentile Bootstrap) UCL	110.7
95% KM (z) UCL	107 95% KM Bootstrap t UCL	144.6
90% KM Chebyshev UCL	128.2 95% KM Chebyshev UCL	149.4
97.5% KM Chebyshev UCL	178.9 99% KM Chebyshev UCL	236.9
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	6.244 Anderson-Darling GOF Test	
5% A-D Critical Value	0.796 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.104 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0642 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		
Gamma Statistics on Detected Data Only		
k hat (MLE)	0.75 k star (bias corrected MLE)	0.742
Theta hat (MLE)	117.3 Theta star (bias corrected MLE)	118.5
nu hat (MLE)	325.4 nu star (bias corrected)	322.2
MLE Mean (bias corrected)	87.94 MLE Sd (bias corrected)	102.1

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.114	nu hat (KM)	54.19
Approximate Chi Square Value (54.19, α)	38.27	Adjusted Chi Square Value (54.19, β)	38.19
95% Gamma Approximate KM-UCL (use when n>=50)	115	95% Gamma Adjusted KM-UCL (use when n<50)	115.2
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	80.53
Maximum	3418	Median	35.19
SD	240.9	CV	2.992
k hat (MLE)	0.462	k star (bias corrected MLE)	0.459
Theta hat (MLE)	174.1	Theta star (bias corrected MLE)	175.3
nu hat (MLE)	219.2	nu star (bias corrected)	217.8
MLE Mean (bias corrected)	80.53	MLE Sd (bias corrected)	118.8
		Adjusted Level of Significance (β)	0.049
Approximate Chi Square Value (217.77, α)	184.6	Adjusted Chi Square Value (217.77, β)	184.4
95% Gamma Approximate UCL (use when n>=50)	94.99	95% Gamma Adjusted UCL (use when n<50)	95.08
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0702	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0601	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	81.14	Mean in Log Scale	3.512
SD in Original Scale	240.8	SD in Log Scale	1.255
95% t UCL (assumes normality of ROS data)	107	95% Percentile Bootstrap UCL	108.5
95% BCA Bootstrap UCL	128.7	95% Bootstrap t UCL	144.9
95% H-UCL (Log ROS)	89.46		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	81.29	Mean in Log Scale	3.508
SD in Original Scale	240.7	SD in Log Scale	1.27
95% t UCL (Assumes normality)	107.1	95% H-Stat UCL	91.19
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	1.49E+02		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total pentachlorodibenzofuran (pecdf)***30402-15-4***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	239
		Number of Missing Observations	0
Minimum	8.23E-06	Mean	1.35E-04
Maximum	0.00223	Median	7.93E-05
SD	1.92E-04	Std. Error of Mean	1.23E-05
Coefficient of Variation	1.418	Skewness	6.367
Normal GOF Test			
Shapiro Wilk Test Statistic	0.556	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.254	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1.56E-04	95% Adjusted-CLT UCL (Chen-1995)	1.61E-04
		95% Modified-t UCL (Johnson-1978)	1.56E-04
Gamma GOF Test			
A-D Test Statistic	4.108	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.78	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.104	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0604	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	1.162	k star (bias corrected MLE)	1.151
Theta hat (MLE)	1.16E-04	Theta star (bias corrected MLE)	1.17E-04
nu hat (MLE)	560.2	nu star (bias corrected)	554.6
MLE Mean (bias corrected)	1.35E-04	MLE Sd (bias corrected)	1.26E-04
		Approximate Chi Square Value (0.05)	501
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	500.7
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1.50E-04	95% Adjusted Gamma UCL (use when n<50)	1.50E-04
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.985	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.617	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0349	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-11.71	Mean of logged Data	-9.398
Maximum of Logged Data	-6.105	SD of logged Data	0.958
Assuming Lognormal Distribution			
95% H-UCL	1.50E-04	90% Chebyshev (MVUE) UCL	1.60E-04
95% Chebyshev (MVUE) UCL	1.73E-04	97.5% Chebyshev (MVUE) UCL	1.91E-04
99% Chebyshev (MVUE) UCL	2.27E-04		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1.55E-04	95% Jackknife UCL	1.56E-04
95% Standard Bootstrap UCL	1.54E-04	95% Bootstrap-t UCL	1.65E-04
95% Hall's Bootstrap UCL	1.74E-04	95% Percentile Bootstrap UCL	1.57E-04
95% BCA Bootstrap UCL	1.61E-04		
90% Chebyshev(Mean, Sd) UCL	1.72E-04	95% Chebyshev(Mean, Sd) UCL	1.89E-04
97.5% Chebyshev(Mean, Sd) UCL	2.12E-04	99% Chebyshev(Mean, Sd) UCL	2.58E-04
Suggested UCL to Use			
95% H-UCL	1.50E-04		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_VALUE (studyarea***total pentachlorodibenzofuran (pecdf)***30402-15-4****t***ng/kg)			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	215
		Number of Missing Observations	0
Minimum	19.9	Mean	1087
Maximum	12900	Median	658
SD	1385	Std. Error of Mean	89.2
Coefficient of Variation	1.274	Skewness	4.066
Normal GOF Test			
Shapiro Wilk Test Statistic	0.658	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.221	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1234	95% Adjusted-CLT UCL (Chen-1995)	1258
		95% Modified-t UCL (Johnson-1978)	1238
Gamma GOF Test			
A-D Test Statistic	1.942	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.783	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0854	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0606	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	1.036	k star (bias corrected MLE)	1.026
Theta hat (MLE)	1049	Theta star (bias corrected MLE)	1059
nu hat (MLE)	499.3	nu star (bias corrected)	494.4
MLE Mean (bias corrected)	1087	MLE Sd (bias corrected)	#####
		Approximate Chi Square Value (0.05)	443.9
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	443.6
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1210	95% Adjusted Gamma UCL (use when n<50)	1211
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.984	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.583	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0311	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.991	Mean of logged Data	6.436
Maximum of Logged Data	9.465	SD of logged Data	1.101
Assuming Lognormal Distribution			
95% H-UCL	1341	90% Chebyshev (MVUE) UCL	1443
95% Chebyshev (MVUE) UCL	1580	97.5% Chebyshev (MVUE) UCL	1771
99% Chebyshev (MVUE) UCL	2146		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1233	95% Jackknife UCL	1234
95% Standard Bootstrap UCL	1231	95% Bootstrap-t UCL	1263
95% Hall's Bootstrap UCL	1278	95% Percentile Bootstrap UCL	1236
95% BCA Bootstrap UCL	1249		
90% Chebyshev(Mean, Sd) UCL	1354	95% Chebyshev(Mean, Sd) UCL	1475
97.5% Chebyshev(Mean, Sd) UCL	1644	99% Chebyshev(Mean, Sd) UCL	1974
Suggested UCL to Use			
95% H-UCL	1341		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_VALUE (studyarea****total pentachlorodibenzo-p-dioxin (pecdd)***36088-22-9***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	237
		Number of Missing Observations	0
Minimum	1.97E-06	Mean	3.65E-05
Maximum	7.84E-04	Median	2.18E-05
SD	6.63E-05	Std. Error of Mean	4.27E-06
Coefficient of Variation	N/A	Skewness	7.723
Normal GOF Test			
Shapiro Wilk Test Statistic	0.4	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.301	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	4.36E-05	95% Adjusted-CLT UCL (Chen-1995)	4.58E-05
		95% Modified-t UCL (Johnson-1978)	4.39E-05
Gamma GOF Test			
A-D Test Statistic	6.367	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.78	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.11	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0604	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	1.154	k star (bias corrected MLE)	1.142
Theta hat (MLE)	3.17E-05	Theta star (bias corrected MLE)	3.20E-05
nu hat (MLE)	556.1	nu star (bias corrected)	550.5
MLE Mean (bias corrected)	3.65E-05	MLE Sd (bias corrected)	3.42E-05
		Approximate Chi Square Value (0.05)	497
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	496.7
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	4.05E-05	95% Adjusted Gamma UCL (use when n<50)	4.05E-05
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.982	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.403	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.034	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-13.14	Mean of logged Data	-10.71
Maximum of Logged Data	-7.151	SD of logged Data	0.901
Assuming Lognormal Distribution			
95% H-UCL	3.78E-05	90% Chebyshev (MVUE) UCL	4.03E-05
95% Chebyshev (MVUE) UCL	4.34E-05	97.5% Chebyshev (MVUE) UCL	4.77E-05
99% Chebyshev (MVUE) UCL	5.62E-05		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	4.36E-05	95% Jackknife UCL	4.36E-05
95% Standard Bootstrap UCL	4.35E-05	95% Bootstrap-t UCL	4.81E-05
95% Hall's Bootstrap UCL	5.48E-05	95% Percentile Bootstrap UCL	4.42E-05
95% BCA Bootstrap UCL	4.54E-05		
90% Chebyshev(Mean, Sd) UCL	4.94E-05	95% Chebyshev(Mean, Sd) UCL	5.52E-05
97.5% Chebyshev(Mean, Sd) UCL	6.32E-05	99% Chebyshev(Mean, Sd) UCL	7.90E-05
Suggested UCL to Use			
95% H-UCL	3.78E-05		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_VALUE (studyarea***total pentachlorodibenzo-p-dioxin (pecdd)***36088-22-9***t***ng/kg)			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	206
		Number of Missing Observations	0
Minimum	6.14	Mean	251.3
Maximum	2370	Median	178
SD	269.8	Std. Error of Mean	17.38
Coefficient of Variation	1.073	Skewness	3.999
Normal GOF Test			
Shapiro Wilk Test Statistic	0.679	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.182	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	280	95% Adjusted-CLT UCL (Chen-1995)	284.7
		95% Modified-t UCL (Johnson-1978)	280.8
Gamma GOF Test			
A-D Test Statistic	1.222	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.774	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0597	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0602	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics		
k hat (MLE)	1.384 k star (bias corrected MLE)	1.369
Theta hat (MLE)	181.7 Theta star (bias corrected MLE)	183.6
nu hat (MLE)	666.9 nu star (bias corrected)	659.9
MLE Mean (bias corrected)	251.3 MLE Sd (bias corrected)	214.8
	Approximate Chi Square Value (0.05)	601.3
Adjusted Level of Significance	0.049 Adjusted Chi Square Value	601
Assuming Gamma Distribution		
95% Approximate Gamma UCL (use when n>=50)	275.8 95% Adjusted Gamma UCL (use when n<50)	276
Lognormal GOF Test		
Shapiro Wilk Test Statistic	0.972 Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0228 Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0627 Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571 Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level		
Lognormal Statistics		
Minimum of Logged Data	1.815 Mean of logged Data	5.124
Maximum of Logged Data	7.771 SD of logged Data	0.95
Assuming Lognormal Distribution		
95% H-UCL	300.2 90% Chebyshev (MVUE) UCL	320.7
95% Chebyshev (MVUE) UCL	346.8 97.5% Chebyshev (MVUE) UCL	383.1
99% Chebyshev (MVUE) UCL	454.4	
Nonparametric Distribution Free UCL Statistics		
Data appear to follow a Discernible Distribution at 5% Significance Level		
Nonparametric Distribution Free UCLs		
95% CLT UCL	279.9 95% Jackknife UCL	280
95% Standard Bootstrap UCL	279.5 95% Bootstrap-t UCL	285.7
95% Hall's Bootstrap UCL	289.5 95% Percentile Bootstrap UCL	280.8
95% BCA Bootstrap UCL	284.5	
90% Chebyshev(Mean, Sd) UCL	303.5 95% Chebyshev(Mean, Sd) UCL	327.1
97.5% Chebyshev(Mean, Sd) UCL	359.9 99% Chebyshev(Mean, Sd) UCL	424.3
Suggested UCL to Use		
95% Approximate Gamma UCL	275.8	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total petroleum hydrocarbons (c9-c40)***tphc9_40***t***mg/kg)		
General Statistics		
Total Number of Observations	318 Number of Distinct Observations	260
Number of Detects	317 Number of Non-Detects	1
Number of Distinct Detects	259 Number of Distinct Non-Detects	1
Minimum Detect	79 Minimum Non-Detect	23.5
Maximum Detect	62500 Maximum Non-Detect	23.5
Variance Detects	1.28E+08 Percent Non-Detects	0.31%
Mean Detects	12507 SD Detects	11303
Median Detects	9780 CV Detects	0.904
Skewness Detects	1.633 Kurtosis Detects	3.348
Mean of Logged Detects	8.975 SD of Logged Detects	1.068
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.842 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.145 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0498 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	12468 Standard Error of Mean	634.1
SD	11289 95% KM (BCA) UCL	13505
95% KM (t) UCL	13514 95% KM (Percentile Bootstrap) UCL	13504
95% KM (z) UCL	13511 95% KM Bootstrap t UCL	13573
90% KM Chebyshev UCL	14370 95% KM Chebyshev UCL	15232
97.5% KM Chebyshev UCL	16428 99% KM Chebyshev UCL	18777
Gamma GOF Tests on Detected Observations Only		
A-D Test Statistic	1.269 Anderson-Darling GOF Test	
5% A-D Critical Value	0.779 Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0544 Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0522 Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level		

Gamma Statistics on Detected Data Only		
k hat (MLE)	1.23 k star (bias corrected MLE)	1.22
Theta hat (MLE)	10171 Theta star (bias corrected MLE)	10251
nu hat (MLE)	779.6 nu star (bias corrected)	773.5
MLE Mean (bias corrected)	12507 MLE Sd (bias corrected)	11323
Gamma Kaplan-Meier (KM) Statistics		
k hat (KM)	1.22 nu hat (KM)	775.7
Approximate Chi Square Value (775.70, α)	712.1 Adjusted Chi Square Value (775.70, β)	711.8
95% Gamma Approximate KM-UCL (use when n>=50)	13582 95% Gamma Adjusted KM-UCL (use when n<50)	13587
Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01 Mean	12468
Maximum	62500 Median	9745
SD	11307 CV	0.907
k hat (MLE)	1.141 k star (bias corrected MLE)	1.132
Theta hat (MLE)	10927 Theta star (bias corrected MLE)	11010
nu hat (MLE)	725.7 nu star (bias corrected)	720.2
MLE Mean (bias corrected)	12468 MLE Sd (bias corrected)	11716
	Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (720.19, α)	658.9 Adjusted Chi Square Value (720.19, β)	658.7
95% Gamma Approximate UCL (use when n>=50)	13627 95% Gamma Adjusted UCL (use when n<50)	13633
Lognormal GOF Test on Detected Observations Only		
Lilliefors Test Statistic	0.0915 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0498 Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	12469 Mean in Log Scale	8.965
SD in Original Scale	11306 SD in Log Scale	1.081
95% t UCL (assumes normality of ROS data)	13515 95% Percentile Bootstrap UCL	13525
95% BCA Bootstrap UCL	13510 95% Bootstrap t UCL	13583
95% H-UCL (Log ROS)	16034	
DL/2 Statistics		
DL/2 Normal	DL/2 Log-Transformed	
Mean in Original Scale	12468 Mean in Log Scale	8.955
SD in Original Scale	11307 SD in Log Scale	1.127
95% t UCL (Assumes normality)	13514 95% H-Stat UCL	16829
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Data do not follow a Discernible Distribution at 5% Significance Level		
Suggested UCL to Use		
95% KM (Chebyshev) UCL	15232	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total petroleum hydrocarbons (c9-c40)***tphc9_40***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	318 Number of Distinct Observations	317
Number of Detects	317 Number of Non-Detects	1
Number of Distinct Detects	316 Number of Distinct Non-Detects	1
Minimum Detect	239.8 Minimum Non-Detect	5.802
Maximum Detect	5237 Maximum Non-Detect	5.802
Variance Detects	738970 Percent Non-Detects	0.31%
Mean Detects	1311 SD Detects	859.6
Median Detects	1134 CV Detects	0.656
Skewness Detects	1.645 Kurtosis Detects	3.383
Mean of Logged Detects	6.985 SD of Logged Detects	0.63
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.855 Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0 Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.128 Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0498 Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	1307 Standard Error of Mean	48.3

SD	860	95% KM (BCA) UCL	1380
95% KM (t) UCL	1386	95% KM (Percentile Bootstrap) UCL	1390
95% KM (z) UCL	1386	95% KM Bootstrap t UCL	1388
90% KM Chebyshev UCL	1451	95% KM Chebyshev UCL	1517
97.5% KM Chebyshev UCL	1608	99% KM Chebyshev UCL	1787

Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.078	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0471	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0513	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data follow Appr. Gamma Distribution at 5% Significance Level			

Gamma Statistics on Detected Data Only			
k hat (MLE)	2.749	k star (bias corrected MLE)	2.725
Theta hat (MLE)	476.8	Theta star (bias corrected MLE)	481
nu hat (MLE)	1743	nu star (bias corrected)	1727
MLE Mean (bias corrected)	1311	MLE Sd (bias corrected)	794

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	2.308	nu hat (KM)	1468
Approximate Chi Square Value (N/A, α)	1380	Adjusted Chi Square Value (N/A, β)	1379
95% Gamma Approximate KM-UCL (use when n \geq 50)	1390	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	1390

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	1307
Maximum	5237	Median	1125
SD	861.4	CV	0.659
k hat (MLE)	2.365	k star (bias corrected MLE)	2.344
Theta hat (MLE)	552.5	Theta star (bias corrected MLE)	557.3
nu hat (MLE)	1504	nu star (bias corrected)	1491
MLE Mean (bias corrected)	1.31E+03	MLE Sd (bias corrected)	853.3
		Adjusted Level of Significance (β)	0.0492
Approximate Chi Square Value (N/A, α)	1402	Adjusted Chi Square Value (N/A, β)	1402
95% Gamma Approximate UCL (use when n \geq 50)	1389	95% Gamma Adjusted UCL (use when n $<$ 50)	1389

Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0428	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0498	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			

Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1307	Mean in Log Scale	6.979
SD in Original Scale	860.7	SD in Log Scale	0.638
95% t UCL (assumes normality of ROS data)	1387	95% Percentile Bootstrap UCL	1387
95% BCA Bootstrap UCL	1391	95% Bootstrap t UCL	1391
95% H-UCL (Log ROS)	1408		

UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	6.969	95% H-UCL (KM -Log)	1455
KM SD (logged)	0.693	95% Critical H Value (KM-Log)	1.899
KM Standard Error of Mean (logged)	0.0389		

DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	1307	Mean in Log Scale	6.967
SD in Original Scale	861.4	SD in Log Scale	0.711
95% t UCL (Assumes normality)	1386	95% H-Stat UCL	1474
DL/2 is not a recommended method, provided for comparisons and historical reasons			

Nonparametric Distribution Free UCL Statistics			
Detected Data appear Approximate Gamma Distributed at 5% Significance Level			

Suggested UCL to Use			
95% KM (BCA) UCL	1380	95% GROS Approximate Gamma UCL	1389
95% Approximate Gamma KM-UCL	1390		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea****total tetrachlorodibenzofuran (tcdf)***30402-14-3****t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	241	Number of Distinct Observations	240

	Number of Missing Observations		0
Minimum	5.93E-06	Mean	1.11E-04
Maximum	0.00108	Median	8.31E-05
SD	1.13E-04	Std. Error of Mean	7.31E-06
Coefficient of Variation	1.019	Skewness	3.577

Normal GOF Test	
Shapiro Wilk Test Statistic	0.741 Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0 Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.176 Lilliefors GOF Test
5% Lilliefors Critical Value	0.0571 Data Not Normal at 5% Significance Level
Data Not Normal at 5% Significance Level	

Assuming Normal Distribution				
95% Normal UCL		95% UCLs (Adjusted for Skewness)		
95% Student's-t UCL	1.23E-04	95% Adjusted-CLT UCL (Chen-1995)		1.25E-04
		95% Modified-t UCL (Johnson-1978)		1.24E-04

Gamma GOF Test	
A-D Test Statistic	0.837 Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.775 Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.0454 Kolmogrov-Smirnoff Gamma GOF Test
5% K-S Critical Value	0.0602 Detected data appear Gamma Distributed at 5% Significance Level
Detected data follow Appr. Gamma Distribution at 5% Significance Level	

Gamma Statistics		
k hat (MLE)	1.359 k star (bias corrected MLE)	1.345
Theta hat (MLE)	8.19E-05 Theta star (bias corrected MLE)	8.28E-05
nu hat (MLE)	655.2 nu star (bias corrected)	648.4
MLE Mean (bias corrected)	1.11E-04 MLE Sd (bias corrected)	9.60E-05
	Approximate Chi Square Value (0.05)	590.3
Adjusted Level of Significance	0.049 Adjusted Chi Square Value	590

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	1.22E-04	95% Adjusted Gamma UCL (use when n<50)	1.22E-04

Lognormal GOF Test	
Shapiro Wilk Test Statistic	0.976 Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0.0758 Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0738 Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0571 Data Not Lognormal at 5% Significance Level
Data appear Approximate Lognormal at 5% Significance Level	

Lognormal Statistics			
Minimum of Logged Data	-12.04	Mean of logged Data	-9.514
Maximum of Logged Data	-6.833	SD of logged Data	0.952

Assuming Lognormal Distribution			
95% H-UCL	1.32E-04	90% Chebyshev (MVUE) UCL	1.41E-04
95% Chebyshev (MVUE) UCL	1.53E-04	97.5% Chebyshev (MVUE) UCL	1.69E-04
99% Chebyshev (MVUE) UCL	2.00E-04		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs			
95% CLT UCL	1.23E-04	95% Jackknife UCL	1.23E-04
95% Standard Bootstrap UCL	1.23E-04	95% Bootstrap-t UCL	1.26E-04
95% Hall's Bootstrap UCL	1.26E-04	95% Percentile Bootstrap UCL	1.24E-04
95% BCA Bootstrap UCL	1.25E-04		
90% Chebyshev(Mean, Sd) UCL	1.33E-04	95% Chebyshev(Mean, Sd) UCL	1.43E-04
97.5% Chebyshev(Mean, Sd) UCL	1.57E-04	99% Chebyshev(Mean, Sd) UCL	1.84E-04

Suggested UCL to Use	
95% Approximate Gamma UCL	1.22E-04

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total tetrachlorodibenzofuran (tcdf)***30402-14-3***t***ng/kg)

General Statistics				
Total Number of Observations		241	Number of Distinct Observations	208
			Number of Missing Observations	0
Minimum	15.6	Mean		895.6
Maximum	6230	Median		547
SD	945.8	Std. Error of Mean		60.93
Coefficient of Variation	1.056	Skewness		2.351

Normal GOF Test			
Shapiro Wilk Test Statistic	0.757	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.176	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	996.2	95% Adjusted-CLT UCL (Chen-1995)	1006
		95% Modified-t UCL (Johnson-1978)	997.7
Gamma GOF Test			
A-D Test Statistic	2.19	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.779	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0834	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0604	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.186	k star (bias corrected MLE)	1.174
Theta hat (MLE)	755.4	Theta star (bias corrected MLE)	763.1
nu hat (MLE)	571.4	nu star (bias corrected)	565.6
MLE Mean (bias corrected)	895.6	MLE Sd (bias corrected)	826.7
		Approximate Chi Square Value (0.05)	511.5
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	511.2
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	990.4	95% Adjusted Gamma UCL (use when n<50)	991
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.976	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0855	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0444	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	2.747	Mean of logged Data	6.32
Maximum of Logged Data	8.737	SD of logged Data	1.034
Assuming Lognormal Distribution			
95% H-UCL	1097	90% Chebyshev (MVUE) UCL	1177
95% Chebyshev (MVUE) UCL	1282	97.5% Chebyshev (MVUE) UCL	1428
99% Chebyshev (MVUE) UCL	1714		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	995.8	95% Jackknife UCL	996.2
95% Standard Bootstrap UCL	997.3	95% Bootstrap-t UCL	1007
95% Hall's Bootstrap UCL	1007	95% Percentile Bootstrap UCL	992.9
95% BCA Bootstrap UCL	1010		
90% Chebyshev(Mean, Sd) UCL	1078	95% Chebyshev(Mean, Sd) UCL	1161
97.5% Chebyshev(Mean, Sd) UCL	1276	99% Chebyshev(Mean, Sd) UCL	1502
Suggested UCL to Use			
95% H-UCL	1097		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_VALUE (studyarea***total tetrachlorodibenzo-p-dioxin (tcdd)***41903-57-5***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	241	Number of Distinct Observations	234
		Number of Missing Observations	0
Minimum	7.30E-07	Mean	2.59E-05
Maximum	3.76E-04	Median	2.00E-05
SD	3.45E-05	Std. Error of Mean	2.22E-06
Coefficient of Variation	N/A	Skewness	6.178

Normal GOF Test			
Shapiro Wilk Test Statistic	0.528	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.234	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	2.96E-05	95% Adjusted-CLT UCL (Chen-1995)	3.05E-05
		95% Modified-t UCL (Johnson-1978)	2.98E-05
Gamma GOF Test			
A-D Test Statistic	2.061	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.777	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0837	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0603	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.28E+00	k star (bias corrected MLE)	126.40%
Theta hat (MLE)	2.03E-05	Theta star (bias corrected MLE)	2.05E-05
nu hat (MLE)	615.6	nu star (bias corrected)	609.3
MLE Mean (bias corrected)	2.59E-05	MLE Sd (bias corrected)	2.31E-05
		Approximate Chi Square Value (0.05)	553
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	552.7
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	2.86E-05	95% Adjusted Gamma UCL (use when n<50)	2.86E-05
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.973	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.0265	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0828	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-14.13	Mean of logged Data	-11
Maximum of Logged Data	-7.887	SD of logged Data	0.958
Assuming Lognormal Distribution			
95% H-UCL	3.01E-05	90% Chebyshev (MVUE) UCL	3.22E-05
95% Chebyshev (MVUE) UCL	3.49E-05	97.5% Chebyshev (MVUE) UCL	3.85E-05
99% Chebyshev (MVUE) UCL	4.58E-05		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	2.96E-05	95% Jackknife UCL	2.96E-05
95% Standard Bootstrap UCL	2.95E-05	95% Bootstrap-t UCL	3.11E-05
95% Hall's Bootstrap UCL	3.24E-05	95% Percentile Bootstrap UCL	2.99E-05
95% BCA Bootstrap UCL	3.07E-05		
90% Chebyshev(Mean, Sd) UCL	3.26E-05	95% Chebyshev(Mean, Sd) UCL	3.56E-05
97.5% Chebyshev(Mean, Sd) UCL	3.98E-05	99% Chebyshev(Mean, Sd) UCL	4.81E-05
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	3.56E-05		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			

RESULT_VALUE (studyarea***total tetrachlorodibenzo-p-dioxin (tcdd)***41903-57-5***t***ng/kg)

General Statistics			
Total Number of Observations	241	Number of Distinct Observations	197
		Number of Missing Observations	0
Minimum	2.95	Mean	181.7
Maximum	1260	Median	142
SD	164.3	Std. Error of Mean	10.58
Coefficient of Variation	0.904	Skewness	2.724
Normal GOF Test			
Shapiro Wilk Test Statistic	0.785	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.138	Lilliefors GOF Test	

5% Lilliefors Critical Value	0.0571 Data Not Normal at 5% Significance Level		
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL	95% UCLs (Adjusted for Skewness)		
95% Student's-t UCL	199.1	95% Adjusted-CLT UCL (Chen-1995)	201
		95% Modified-t UCL (Johnson-1978)	199.4
Gamma GOF Test			
A-D Test Statistic	0.347	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.772	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0354	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.06	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.502	k star (bias corrected MLE)	1.486
Theta hat (MLE)	121	Theta star (bias corrected MLE)	122.3
nu hat (MLE)	723.9	nu star (bias corrected)	716.2
MLE Mean (bias corrected)	181.7	MLE Sd (bias corrected)	149
		Approximate Chi Square Value (0.05)	655.1
Adjusted Level of Significance	0.049	Adjusted Chi Square Value	654.8
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50)	198.6	95% Adjusted Gamma UCL (use when n<50)	198.7
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.963	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	2.06E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0726	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0571	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.082	Mean of logged Data	4.834
Maximum of Logged Data	7.139	SD of logged Data	0.943
Assuming Lognormal Distribution			
95% H-UCL	222.9	90% Chebyshev (MVUE) UCL	238.1
95% Chebyshev (MVUE) UCL	257.3	97.5% Chebyshev (MVUE) UCL	284.1
99% Chebyshev (MVUE) UCL	336.6		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	199.1	95% Jackknife UCL	199.1
95% Standard Bootstrap UCL	199	95% Bootstrap-t UCL	201.2
95% Hall's Bootstrap UCL	202.5	95% Percentile Bootstrap UCL	199.3
95% BCA Bootstrap UCL	200.6		
90% Chebyshev(Mean, Sd) UCL	213.4	95% Chebyshev(Mean, Sd) UCL	227.8
97.5% Chebyshev(Mean, Sd) UCL	247.7	99% Chebyshev(Mean, Sd) UCL	287
Suggested UCL to Use			
95% Approximate Gamma UCL	1.99E+02		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total volatile petroleum hydrocarbons (u = 1/2)***tvph_n***t***mg/kg)

General Statistics			
Total Number of Observations	205	Number of Distinct Observations	187
Number of Detects	104	Number of Non-Detects	101
Number of Distinct Detects	101	Number of Distinct Non-Detects	87
Minimum Detect	9.76	Minimum Non-Detect	5.28
Maximum Detect	608.1	Maximum Non-Detect	46.3
Variance Detects	6326	Percent Non-Detects	49.27%
Mean Detects	87.29	SD Detects	79.53
Median Detects	69.25	CV Detects	0.911
Skewness Detects	4.233	Kurtosis Detects	23.2
Mean of Logged Detects	4.23E+00	SD of Logged Detects	0.677
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.628	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.202	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0869	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	48.02	Standard Error of Mean	4.872
SD	69.11	95% KM (BCA) UCL	56.84
95% KM (t) UCL	56.07	95% KM (Percentile Bootstrap) UCL	55.81
95% KM (z) UCL	56.03	95% KM Bootstrap t UCL	58.3
90% KM Chebyshev UCL	62.63	95% KM Chebyshev UCL	69.25
97.5% KM Chebyshev UCL	78.44	99% KM Chebyshev UCL	96.5
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.406	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0946	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0895	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.253	k star (bias corrected MLE)	2.194
Theta hat (MLE)	38.75	Theta star (bias corrected MLE)	39.79
nu hat (MLE)	468.5	nu star (bias corrected)	456.3
MLE Mean (bias corrected)	87.29	MLE Sd (bias corrected)	58.93
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.483	nu hat (KM)	197.9
Approximate Chi Square Value (197.91, α)	166.4	Adjusted Chi Square Value (197.91, β)	166.2
95% Gamma Approximate KM-UCL (use when $n \geq 50$)	57.12	95% Gamma Adjusted KM-UCL (use when $n < 50$)	57.19
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	44.29
Maximum	608.1	Median	12.03
SD	71.47	CV	1.614
k hat (MLE)	0.19	k star (bias corrected MLE)	0.19
Theta hat (MLE)	233.6	Theta star (bias corrected MLE)	233
nu hat (MLE)	77.75	nu star (bias corrected)	77.94
MLE Mean (bias corrected)	44.29	MLE Sd (bias corrected)	101.6
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (77.94, α)	58.6	Adjusted Chi Square Value (77.94, β)	58.49
95% Gamma Approximate UCL (use when $n \geq 50$)	58.9	95% Gamma Adjusted UCL (use when $n < 50$)	59.02
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.0699	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0869	Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	51.42	Mean in Log Scale	3.456
SD in Original Scale	67.29	SD in Log Scale	0.932
95% t UCL (assumes normality of ROS data)	59.18	95% Percentile Bootstrap UCL	59.65
95% BCA Bootstrap UCL	60.96	95% Bootstrap t UCL	60.95
95% H-UCL (Log ROS)	56.07		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	3.092	95% H-UCL (KM -Log)	62.4
KM SD (logged)	1.285	95% Critical H Value (KM-Log)	2.399
KM Standard Error of Mean (logged)	0.106		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	49.36	Mean in Log Scale	3.259
SD in Original Scale	68.49	SD in Log Scale	1.134
95% t UCL (Assumes normality)	57.26	95% H-Stat UCL	59.23
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Lognormal Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (t) UCL	56.07	95% KM (% Bootstrap) UCL	55.81

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total volatile petroleum hydrocarbons (u = 1/2)***tvph_n***t***mg/kg (at 1% toc))

General Statistics

Total Number of Observations	205	Number of Distinct Observations	204
Number of Detects	104	Number of Non-Detects	101
Number of Distinct Detects	104	Number of Distinct Non-Detects	100
Minimum Detect	2.178	Minimum Non-Detect	1.034
Maximum Detect	63.08	Maximum Non-Detect	24.12
Variance Detects	53.22	Percent Non-Detects	49.27%
Mean Detects	8.574	SD Detects	7.295
Median Detects	6.641	CV Detects	0.851
Skewness Detects	4.479	Kurtosis Detects	29.97
Mean of Logged Detects	1.945	SD of Logged Detects	0.599
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.657	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	0	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.193	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0869	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	5.184	Standard Error of Mean	0.446
SD	6.279	95% KM (BCA) UCL	6.062
95% KM (t) UCL	5.921	95% KM (Percentile Bootstrap) UCL	5.996
95% KM (z) UCL	5.918	95% KM Bootstrap t UCL	6.071
90% KM Chebyshev UCL	6.523	95% KM Chebyshev UCL	7.129
97.5% KM Chebyshev UCL	7.97	99% KM Chebyshev UCL	9.623
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.917	Anderson-Darling GOF Test	
5% A-D Critical Value	0.761	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.109	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.0892	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.612	k star (bias corrected MLE)	2.543
Theta hat (MLE)	3.283	Theta star (bias corrected MLE)	3.372
nu hat (MLE)	543.2	nu star (bias corrected)	528.9
MLE Mean (bias corrected)	8.574	MLE Sd (bias corrected)	5.377
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.682	nu hat (KM)	279.5
Approximate Chi Square Value (279.50, α)	241.8	Adjusted Chi Square Value (279.50, β)	241.5
95% Gamma Approximate KM-UCL (use when n>=50)	5.993	95% Gamma Adjusted KM-UCL (use when n<50)	5.999
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	4.371
Maximum	63.08	Median	2.271
SD	6.721	CV	1.538
k hat (MLE)	0.266	k star (bias corrected MLE)	0.265
Theta hat (MLE)	16.46	Theta star (bias corrected MLE)	16.5
nu hat (MLE)	108.9	nu star (bias corrected)	108.6
MLE Mean (bias corrected)	4.371	MLE Sd (bias corrected)	8.492
		Adjusted Level of Significance (β)	0.0488
Approximate Chi Square Value (108.62, α)	85.56	Adjusted Chi Square Value (108.62, β)	85.42
95% Gamma Approximate UCL (use when n>=50)	5.549	95% Gamma Adjusted UCL (use when n<50)	5.558
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.088	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0869	Detected Data Not Lognormal at 5% Significance Level	
Detected Data appear Approximate Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	5.341	Mean in Log Scale	1.32
SD in Original Scale	6.146	SD in Log Scale	0.779
95% t UCL (assumes normality of ROS data)	6.05	95% Percentile Bootstrap UCL	6.099
95% BCA Bootstrap UCL	6.225	95% Bootstrap t UCL	6.278
95% H-UCL (Log ROS)	5.648		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	1.154	95% H-UCL (KM -Log)	5.975
KM SD (logged)	0.986	95% Critical H Value (KM-Log)	2.133
KM Standard Error of Mean (logged)	0.0761		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	5.327	Mean in Log Scale	1.249
SD in Original Scale	6.218	SD in Log Scale	0.912

95% t UCL (Assumes normality)

6.044

95% H-Stat UCL

6.029

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Approximate Lognormal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL

5.921

95% KM (% Bootstrap) UCL

5.996

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***total xylene (km) (mdl)***txylene_km_mdl***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	25	Number of Distinct Observations	25
Number of Detects	16	Number of Non-Detects	9
Number of Distinct Detects	16	Number of Distinct Non-Detects	9
Minimum Detect	0.0459	Minimum Non-Detect	0.00595
Maximum Detect	1.205	Maximum Non-Detect	0.457
Variance Detects	0.122	Percent Non-Detects	36%
Mean Detects	0.405	SD Detects	0.35
Median Detects	0.304	CV Detects	0.864
Skewness Detects	1.103	Kurtosis Detects	0.258
Mean of Logged Detects	-1.311	SD of Logged Detects	1.011

Normal GOF Test on Detects Only	
Shapiro Wilk Test Statistic	0.859 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.887 Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.239 Lilliefors GOF Test
5% Lilliefors Critical Value	0.222 Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level	

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	0.274	Standard Error of Mean	0.0681
SD	0.327	95% KM (BCA) UCL	0.391
95% KM (t) UCL	0.391	95% KM (Percentile Bootstrap) UCL	0.383
95% KM (z) UCL	0.386	95% KM Bootstrap t UCL	0.43
90% KM Chebyshev UCL	0.478	95% KM Chebyshev UCL	57.10%
97.5% KM Chebyshev UCL	0.699	99% KM Chebyshev UCL	0.952

Gamma GOF Tests on Detected Observations Only	
A-D Test Statistic	0.306 Anderson-Darling GOF Test
5% A-D Critical Value	0.757 Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.13 Kolmogrov-Smirnoff GOF
5% K-S Critical Value	0.219 Detected data appear Gamma Distributed at 5% Significance Level
Detected data appear Gamma Distributed at 5% Significance Level	

Gamma Statistics on Detected Data Only			
k hat (MLE)	1.37	k star (bias corrected MLE)	1.155
Theta hat (MLE)	0.296	Theta star (bias corrected MLE)	0.351
nu hat (MLE)	43.84	nu star (bias corrected)	36.95
MLE Mean (bias corrected)	0.405	MLE Sd (bias corrected)	0.377

Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.705	nu hat (KM)	35.26
Approximate Chi Square Value (35.26, α)	22.67	Adjusted Chi Square Value (35.26, β)	21.98
95% Gamma Approximate KM-UCL (use when n>=50)	0.426	95% Gamma Adjusted KM-UCL (use when n<50)	0.44

Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	0.268
Maximum	1.205	Median	0.124
SD	0.334	CV	1.249
k hat (MLE)	0.603	k star (bias corrected MLE)	0.557
Theta hat (MLE)	0.444	Theta star (bias corrected MLE)	0.481
nu hat (MLE)	30.13	nu star (bias corrected)	27.85
MLE Mean (bias corrected)	0.268	MLE Sd (bias corrected)	0.359
		Adjusted Level of Significance (β)	0.0395
Approximate Chi Square Value (27.85, α)	16.81	Adjusted Chi Square Value (27.85, β)	16.23
95% Gamma Approximate UCL (use when n>=50)	0.443	95% Gamma Adjusted UCL (use when n<50)	0.459

Lognormal GOF Test on Detected Observations Only	
Shapiro Wilk Test Statistic	0.944 Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.887 Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.143 Lilliefors GOF Test

5% Lilliefors Critical Value		0.222 Detected Data appear Lognormal at 5% Significance Level	
Detected Data appear Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.276	Mean in Log Scale	-1.982
SD in Original Scale	0.328	SD in Log Scale	1.25
95% t UCL (assumes normality of ROS data)	0.389	95% Percentile Bootstrap UCL	0.391
95% BCA Bootstrap UCL	0.405	95% Bootstrap t UCL	0.428
95% H-UCL (Log ROS)	0.619		
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed			
KM Mean (logged)	-2.453	95% H-UCL (KM -Log)	2.196
KM SD (logged)	1.886	95% Critical H Value (KM-Log)	3.794
KM Standard Error of Mean (logged)	0.41		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.283	Mean in Log Scale	-2.366
SD in Original Scale	0.327	SD in Log Scale	1.986
95% t UCL (Assumes normality)	0.395	95% H-Stat UCL	3.353
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Detected Data appear Gamma Distributed at 5% Significance Level			
Suggested UCL to Use			
95% KM (Percentile Bootstrap) UCL	0.383	95% GROS Adjusted Gamma UCL	0.459
95% Adjusted Gamma KM-UCL	0.44		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total xylene (km) (mdl)***txylene_km_mdl***t***ug/kg)			
General Statistics			
Total Number of Observations	25	Number of Distinct Observations	23
Number of Detects	16	Number of Non-Detects	9
Number of Distinct Detects	16	Number of Distinct Non-Detects	8
Minimum Detect	440	Minimum Non-Detect	66
Maximum Detect	11000	Maximum Non-Detect	5200
Variance Detects	10484515	Percent Non-Detects	36%
Mean Detects	3959	SD Detects	3238
Median Detects	3192	CV Detects	0.818
Skewness Detects	0.94	Kurtosis Detects	-0.125
Mean of Logged Detects	7.896	SD of Logged Detects	0.997
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.877	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	8.87E-01	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.233	Lilliefors GOF Test	
5% Lilliefors Critical Value	2.22E-01	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	2711	Standard Error of Mean	642.8
SD	3070	95% KM (BCA) UCL	3725
95% KM (t) UCL	3810	95% KM (Percentile Bootstrap) UCL	3785
95% KM (z) UCL	3768	95% KM Bootstrap t UCL	4041
90% KM Chebyshev UCL	4639	95% KM Chebyshev UCL	5512
97.5% KM Chebyshev UCL	6725	99% KM Chebyshev UCL	9106
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	0.325	Anderson-Darling GOF Test	
5% A-D Critical Value	0.756	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.135	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.219	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	1.434	k star (bias corrected MLE)	1.207
Theta hat (MLE)	2761	Theta star (bias corrected MLE)	3281
nu hat (MLE)	45.89	nu star (bias corrected)	38.62
MLE Mean (bias corrected)	3959	MLE Sd (bias corrected)	3604
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.78	nu hat (KM)	38.99
Approximate Chi Square Value (38.99, α)	25.69	Adjusted Chi Square Value (38.99, β)	24.95
95% Gamma Approximate KM-UCL (use when n>=50)	4114	95% Gamma Adjusted KM-UCL (use when n<50)	4236

Gamma ROS Statistics using Imputed Non-Detects		
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs		
GROS may not be used when kstar of detected data is small such as < 0.1		
For such situations, GROS method tends to yield inflated values of UCLs and BTVs		
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates		
Minimum	0.01	Mean 2637
Maximum	11000	Median 1308
SD	3140	CV 1.191
k hat (MLE)	0.231	k star (bias corrected MLE) 0.23
Theta hat (MLE)	11439	Theta star (bias corrected MLE) 11488
nu hat (MLE)	11.53	nu star (bias corrected) 11.48
MLE Mean (bias corrected)	2637	MLE Sd (bias corrected) 5504
		Adjusted Level of Significance (β) 0.0395
Approximate Chi Square Value (11.48, α)	4.885	Adjusted Chi Square Value (11.48, β) 4.594
95% Gamma Approximate UCL (use when n>=50)	6196	95% Gamma Adjusted UCL (use when n<50) 6589
Lognormal GOF Test on Detected Observations Only		
Shapiro Wilk Test Statistic	0.935	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.887	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.155	Lilliefors GOF Test
5% Lilliefors Critical Value	0.222	Detected Data appear Lognormal at 5% Significance Level
Detected Data appear Lognormal at 5% Significance Level		
Lognormal ROS Statistics Using Imputed Non-Detects		
Mean in Original Scale	2723	Mean in Log Scale 7.254
SD in Original Scale	3069	SD in Log Scale 1.222
95% t UCL (assumes normality of ROS data)	3773	95% Percentile Bootstrap UCL 3761
95% BCA Bootstrap UCL	3837	95% Bootstrap t UCL 4091
95% H-UCL (Log ROS)	5984	
UCLs using Lognormal Distribution and KM Estimates when Detected data are Lognormally Distributed		
KM Mean (logged)	6.806	95% H-UCL (KM -Log) 19590
KM SD (logged)	1.836	95% Critical H Value (KM-Log) 3.714
KM Standard Error of Mean (logged)	0.4	
DL/2 Statistics		
DL/2 Normal		DL/2 Log-Transformed
Mean in Original Scale	2801	Mean in Log Scale 6.846
SD in Original Scale	3070	SD in Log Scale 2.005
95% t UCL (Assumes normality)	3852	95% H-Stat UCL 35860
DL/2 is not a recommended method, provided for comparisons and historical reasons		
Nonparametric Distribution Free UCL Statistics		
Detected Data appear Gamma Distributed at 5% Significance Level		
Suggested UCL to Use		
95% KM (Percentile Bootstrap) UCL	3785	95% GROS Adjusted Gamma UCL 6589
95% Adjusted Gamma KM-UCL	4236	
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.		
Recommendations are based upon data size, data distribution, and skewness.		
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).		
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.		
RESULT_VALUE (studyarea***total xylene (km) (rl)***txylene_km_rl***t***mg/kg (at 1% toc))		
General Statistics		
Total Number of Observations	147	Number of Distinct Observations 138
Number of Detects	11	Number of Non-Detects 136
Number of Distinct Detects	11	Number of Distinct Non-Detects 128
Minimum Detect	2.20E-04	Minimum Non-Detect 4.30E-04
Maximum Detect	0.0965	Maximum Non-Detect 0.149
Variance Detects	8.38E-04	Percent Non-Detects 92.52%
Mean Detects	0.0115	SD Detects 0.0289
Median Detects	9.70E-04	CV Detects 251.30%
Skewness Detects	3.043	Kurtosis Detects 9.48
Mean of Logged Detects	-6.494	SD of Logged Detects 1.815
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic	0.455	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.45	Lilliefors GOF Test
5% Lilliefors Critical Value	0.267	Detected Data Not Normal at 5% Significance Level
Detected Data Not Normal at 5% Significance Level		
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
Mean	0.00122	Standard Error of Mean 7.10E-04
SD	0.00814	95% KM (BCA) UCL 0.00267
95% KM (t) UCL	0.0024	95% KM (Percentile Bootstrap) UCL 0.00249
95% KM (z) UCL	0.00239	95% KM Bootstrap t UCL 0.0199
90% KM Chebyshev UCL	0.00335	95% KM Chebyshev UCL 0.00432

97.5% KM Chebyshev UCL	0.00566	99% KM Chebyshev UCL	0.00829
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.862	Anderson-Darling GOF Test	
5% A-D Critical Value	0.814	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.406	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.275	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	0.334	k star (bias corrected MLE)	0.303
Theta hat (MLE)	0.0345	Theta star (bias corrected MLE)	0.038
nu hat (MLE)	7.343	nu star (bias corrected)	6.673
MLE Mean (bias corrected)	0.0115	MLE Sd (bias corrected)	0.0209
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0225	nu hat (KM)	6.623
Approximate Chi Square Value (6.62, α)	1.966	Adjusted Chi Square Value (6.62, β)	1.941
95% Gamma Approximate KM-UCL (use when n \geq 50)	0.00411	95% Gamma Adjusted KM-UCL (use when n $<$ 50)	0.00417
Gamma (KM) may not be used when k hat (KM) is $<$ 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has $>$ 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as $<$ 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	2.20E-04	Mean	0.0101
Maximum	0.0965	Median	0.01
SD	0.00758	CV	0.75
k hat (MLE)	3.433	k star (bias corrected MLE)	3.368
Theta hat (MLE)	0.00295	Theta star (bias corrected MLE)	0.003
nu hat (MLE)	1009	nu star (bias corrected)	990
MLE Mean (bias corrected)	0.0101	MLE Sd (bias corrected)	0.00551
		Adjusted Level of Significance (β)	0.0484
Approximate Chi Square Value (990.05, α)	918	Adjusted Chi Square Value (990.05, β)	917.3
95% Gamma Approximate UCL (use when n \geq 50)	0.0109	95% Gamma Adjusted UCL (use when n $<$ 50)	0.0109
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.795	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.294	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	0.00103	Mean in Log Scale	-8.453
SD in Original Scale	0.00814	SD in Log Scale	0.765
95% t UCL (assumes normality of ROS data)	0.00215	95% Percentile Bootstrap UCL	0.00234
95% BCA Bootstrap UCL	0.00354	95% Bootstrap t UCL	0.0402
95% H-UCL (Log ROS)	3.25E-04		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	0.00347	Mean in Log Scale	-7.249
SD in Original Scale	0.0121	SD in Log Scale	1.192
95% t UCL (Assumes normality)	0.00512	95% H-Stat UCL	0.00183
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (Chebyshev) UCL	0.00432		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.			
Recommendations are based upon data size, data distribution, and skewness.			
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).			
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***total xylene (km) (rl)**txylene_km_ri***t***ug/kg)			
General Statistics			
Total Number of Observations	147	Number of Distinct Observations	67
Number of Detects	11	Number of Non-Detects	136
Number of Distinct Detects	1.10E+01	Number of Distinct Non-Detects	6.00E+01
Minimum Detect	2.75E+00	Minimum Non-Detect	3.00E+00
Maximum Detect	1.37E+03	Maximum Non-Detect	#####
Variance Detects	1.75E+05	Percent Non-Detects	92.52%
Mean Detects	1.72E+02	SD Detects	418.5
Median Detects	9.7	CV Detects	2.438
Skewness Detects	2.837	Kurtosis Detects	8.228

Mean of Logged Detects	2.794	SD of Logged Detects	2.009
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.479	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.463	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.267	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	1.60E+01	Standard Error of Mean	1.03E+01
SD	1.18E+02	95% KM (BCA) UCL	3.47E+01
95% KM (t) UCL	3.30E+01	95% KM (Percentile Bootstrap) UCL	3.46E+01
95% KM (z) UCL	3.29E+01	95% KM Bootstrap t UCL	6.20E+02
90% KM Chebyshev UCL	4.69E+01	95% KM Chebyshev UCL	6.09E+01
97.5% KM Chebyshev UCL	80.33	99% KM Chebyshev UCL	118.5
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.941	Anderson-Darling GOF Test	
5% A-D Critical Value	0.823	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.429	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.276	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.94E-01	k star (bias corrected MLE)	2.75E-01
Theta hat (MLE)	583.7	Theta star (bias corrected MLE)	625.4
nu hat (MLE)	6.47E+00	nu star (bias corrected)	6.04E+00
MLE Mean (bias corrected)	171.7	MLE Sd (bias corrected)	327.7
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	0.0182	nu hat (KM)	5.35
Approximate Chi Square Value (5.35, α)	1.32E+00	Adjusted Chi Square Value (5.35, β)	1.30E+00
95% Gamma Approximate KM-UCL (use when n>=50)	64.89	95% Gamma Adjusted KM-UCL (use when n<50)	65.86
Gamma (KM) may not be used when k hat (KM) is < 0.1			
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.01	Mean	12.86
Maximum	1370	Median	0.01
SD	118.5	CV	9.22
k hat (MLE)	0.12	k star (bias corrected MLE)	0.122
Theta hat (MLE)	1.07E+02	Theta star (bias corrected MLE)	105.3
nu hat (MLE)	35.3	nu star (bias corrected)	35.91
MLE Mean (bias corrected)	12.86	MLE Sd (bias corrected)	36.79
		Adjusted Level of Significance (β)	4.84E-02
Approximate Chi Square Value (35.91, α)	23.19	Adjusted Chi Square Value (35.91, β)	23.09
95% Gamma Approximate UCL (use when n>=50)	19.9	95% Gamma Adjusted UCL (use when n<50)	19.99
Lognormal GOF Test on Detected Observations Only			
Shapiro Wilk Test Statistic	0.76	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.313	Lilliefors GOF Test	
5% Lilliefors Critical Value	2.67E-01	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	1.43E+01	Mean in Log Scale	0.275
SD in Original Scale	118.4	SD in Log Scale	1.218
95% t UCL (assumes normality of ROS data)	30.42	95% Percentile Bootstrap UCL	32.77
95% BCA Bootstrap UCL	45.37	95% Bootstrap t UCL	6.88E+02
95% H-UCL (Log ROS)	3.522		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	40.08	Mean in Log Scale	1.634
SD in Original Scale	1.53E+02	SD in Log Scale	1.33
95% t UCL (Assumes normality)	6.10E+01	95% H-Stat UCL	16.39
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
97.5% KM (Chebyshev) UCL	80.33		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***vanadium***7440-62-2***t***mg/kg)

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	284
		Number of Missing Observations	0
Minimum	5.67	Mean	49.76
Maximum	154	Median	43.8
SD	22.96	Std. Error of Mean	1.2
Coefficient of Variation	0.461	Skewness	108.00%
Normal GOF Test			
Shapiro Wilk Test Statistic	0.927	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.12	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	51.74	95% Adjusted-CLT UCL (Chen-1995)	51.81
		95% Modified-t UCL (Johnson-1978)	51.75
Gamma GOF Test			
A-D Test Statistic	2.258	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.758	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.0586	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0477	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.719	k star (bias corrected MLE)	4.683
Theta hat (MLE)	10.54	Theta star (bias corrected MLE)	10.63
nu hat (MLE)	3455	nu star (bias corrected)	3428
MLE Mean (bias corrected)	49.76	MLE Sd (bias corrected)	23
		Approximate Chi Square Value (0.05)	3293
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	3292
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	51.8	95% Adjusted Gamma UCL (use when n<50)	51.81
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.943	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0793	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.735	Mean of logged Data	3.798
Maximum of Logged Data	5.037	SD of logged Data	0.495
Assuming Lognormal Distribution			
95% H-UCL	52.8	90% Chebyshev (MVUE) UCL	54.52
95% Chebyshev (MVUE) UCL	56.39	97.5% Chebyshev (MVUE) UCL	58.99
99% Chebyshev (MVUE) UCL	64.1		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	51.74	95% Jackknife UCL	51.74
95% Standard Bootstrap UCL	51.7	95% Bootstrap-t UCL	51.84
95% Hall's Bootstrap UCL	51.85	95% Percentile Bootstrap UCL	51.79
95% BCA Bootstrap UCL	51.74		
90% Chebyshev(Mean, Sd) UCL	53.36	95% Chebyshev(Mean, Sd) UCL	54.99
97.5% Chebyshev(Mean, Sd) UCL	57.26	99% Chebyshev(Mean, Sd) UCL	61.7
Suggested UCL to Use			
95% Student's-t UCL	51.74	or 95% Modified-t UCL	51.75

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.

RESULT_VALUE (studyarea***vanadium***7440-62-2***t***mg/kg (at 1% toc))

General Statistics			
Total Number of Observations	366	Number of Distinct Observations	366
		Number of Missing Observations	0
Minimum	0.324	Mean	6.672
Maximum	26.37	Median	6.742
SD	3.056	Std. Error of Mean	0.16
Coefficient of Variation	0.458	Skewness	1.074
Normal GOF Test			
Shapiro Wilk Test Statistic	0.955	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	4.77E-11	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.0407	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data appear Normal at 5% Significance Level	
Data appear Approximate Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	6.936	95% Adjusted-CLT UCL (Chen-1995)	6.945
		95% Modified-t UCL (Johnson-1978)	6.937
Gamma GOF Test			
A-D Test Statistic	2.27E+00	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.758	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	7.61E-02	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	4.77E-02	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	4.285	k star (bias corrected MLE)	4.252
Theta hat (MLE)	1.557	Theta star (bias corrected MLE)	1.569
nu hat (MLE)	3137	nu star (bias corrected)	3112
MLE Mean (bias corrected)	6.672	MLE Sd (bias corrected)	3.236
		Approximate Chi Square Value (0.05)	2984
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	2983
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	6.96	95% Adjusted Gamma UCL (use when n<50)	6.961
Lognormal GOF Test			
Shapiro Wilk Test Statistic	9.24E-01	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.00E+00	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0987	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	-1.127	Mean of logged Data	1.777
Maximum of Logged Data	3.272	SD of logged Data	0.542
Assuming Lognormal Distribution			
95% H-UCL	7.208	90% Chebyshev (MVUE) UCL	7.465
95% Chebyshev (MVUE) UCL	7.746	97.5% Chebyshev (MVUE) UCL	8.137
99% Chebyshev (MVUE) UCL	8.905		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	6.935	95% Jackknife UCL	6.936
95% Standard Bootstrap UCL	6.926	95% Bootstrap-t UCL	6.947
95% Hall's Bootstrap UCL	6.935	95% Percentile Bootstrap UCL	6.942
95% BCA Bootstrap UCL	6.927		
90% Chebyshev(Mean, Sd) UCL	7.151	95% Chebyshev(Mean, Sd) UCL	7.368
97.5% Chebyshev(Mean, Sd) UCL	7.67	99% Chebyshev(Mean, Sd) UCL	8.261
Suggested UCL to Use			
95% Student's-t UCL	6.936		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			

Maximum	13900	Median	960
SD	1651	Std. Error of Mean	86.28
Coefficient of Variation	1.137	Skewness	3.283
Normal GOF Test			
Shapiro Wilk Test Statistic	0.697	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0.00E+00	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.205	Lilliefors GOF Test	
5% Lilliefors Critical Value	4.63E-02	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	1595	95% Adjusted-CLT UCL (Chen-1995)	1610
		95% Modified-t UCL (Johnson-1978)	1597
Gamma GOF Test			
A-D Test Statistic	3.69E+00	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.779	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	6.87E-02	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0487	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	1.218	k star (bias corrected MLE)	1.21
Theta hat (MLE)	1192	Theta star (bias corrected MLE)	1200
nu hat (MLE)	891.6	nu star (bias corrected)	885.7
MLE Mean (bias corrected)	1452	MLE Sd (bias corrected)	1320
		Approximate Chi Square Value (0.05)	817.6
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	817.3
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	1573	95% Adjusted Gamma UCL (use when n<50)	1574
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.984	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	0.452	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0327	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	3.424	Mean of logged Data	6.817
Maximum of Logged Data	9.54	SD of logged Data	0.975
Assuming Lognormal Distribution			
95% H-UCL	1636	90% Chebyshev (MVUE) UCL	1738
95% Chebyshev (MVUE) UCL	1860	97.5% Chebyshev (MVUE) UCL	2031
99% Chebyshev (MVUE) UCL	2365		
Nonparametric Distribution Free UCL Statistics			
Data appear to follow a Discernible Distribution at 5% Significance Level			
Nonparametric Distribution Free UCLs			
95% CLT UCL	1594	95% Jackknife UCL	1595
95% Standard Bootstrap UCL	1590	95% Bootstrap-t UCL	1613
95% Hall's Bootstrap UCL	1619	95% Percentile Bootstrap UCL	1593
95% BCA Bootstrap UCL	1611		
90% Chebyshev(Mean, Sd) UCL	1711	95% Chebyshev(Mean, Sd) UCL	1828
97.5% Chebyshev(Mean, Sd) UCL	1991	99% Chebyshev(Mean, Sd) UCL	2311
Suggested UCL to Use			
95% H-UCL	1636		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
ProUCL computes and outputs H-statistic based UCLs for historical reasons only. H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide. It is therefore recommended to avoid the use of H-statistic based 95% UCLs. Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.			
RESULT_VALUE (studyarea***zinc***7440-66-6***t***mg/kg (at 1% toc))			
General Statistics			
Total Number of Observations	366	Number of Distinct Observations	364
		Number of Missing Observations	0
Minimum	6.514	Mean	156.5

Maximum	1732	Median	108.8
SD	151.2	Std. Error of Mean	7.902
Coefficient of Variation	0.966	Skewness	4.834
Normal GOF Test			
Shapiro Wilk Test Statistic	0.639	Shapiro Wilk GOF Test	
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.223	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			
Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	169.5	95% Adjusted-CLT UCL (Chen-1995)	171.6
		95% Modified-t UCL (Johnson-1978)	169.8
Gamma GOF Test			
A-D Test Statistic	10.74	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.765	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.145	Kolmogrov-Smirnoff Gamma GOF Test	
5% K-S Critical Value	0.0481	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	2.089	k star (bias corrected MLE)	2.074
Theta hat (MLE)	74.89	Theta star (bias corrected MLE)	75.45
nu hat (MLE)	1529	nu star (bias corrected)	1518
MLE Mean (bias corrected)	156.5	MLE Sd (bias corrected)	108.7
		Approximate Chi Square Value (0.05)	1429
Adjusted Level of Significance	0.0493	Adjusted Chi Square Value	1428
Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	166.3	95% Adjusted Gamma UCL (use when n<50)	166.3
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.969	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk P Value	2.24E-04	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.0911	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.0463	Data Not Lognormal at 5% Significance Level	
Data Not Lognormal at 5% Significance Level			
Lognormal Statistics			
Minimum of Logged Data	1.874	Mean of logged Data	4.795
Maximum of Logged Data	7.457	SD of logged Data	0.685
Assuming Lognormal Distribution			
95% H-UCL	163.6	90% Chebyshev (MVUE) UCL	170.9
95% Chebyshev (MVUE) UCL	179.1	97.5% Chebyshev (MVUE) UCL	190.5
99% Chebyshev (MVUE) UCL	213		
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution (0.05)			
Nonparametric Distribution Free UCLs			
95% CLT UCL	169.5	95% Jackknife UCL	169.5
95% Standard Bootstrap UCL	169.3	95% Bootstrap-t UCL	172.8
95% Hall's Bootstrap UCL	173.6	95% Percentile Bootstrap UCL	169.7
95% BCA Bootstrap UCL	172.5		
90% Chebyshev(Mean, Sd) UCL	180.2	95% Chebyshev(Mean, Sd) UCL	190.9
97.5% Chebyshev(Mean, Sd) UCL	205.8	99% Chebyshev(Mean, Sd) UCL	235.1
Suggested UCL to Use			
95% Chebyshev (Mean, Sd) UCL	190.9		
Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). However, simulations results will not cover all Real World data sets. For additional insight the user may want to consult a statistician.			
RESULT_VALUE (studyarea***zinc-sem***7440-66-6sem***t***umol/g)			
General Statistics			
Total Number of Observations	84	Number of Distinct Observations	84
Number of Detects	81	Number of Non-Detects	3
Number of Distinct Detects	81	Number of Distinct Non-Detects	3
Minimum Detect	2.233	Minimum Non-Detect	2.591
Maximum Detect	62.13	Maximum Non-Detect	2.901
Variance Detects	107.2	Percent Non-Detects	3.57%
Mean Detects	14.18	SD Detects	10.36
Median Detects	13.4	CV Detects	0.731
Skewness Detects	1.899	Kurtosis Detects	5.647

Mean of Logged Detects	2.393	SD of Logged Detects	0.765
Normal GOF Test on Detects Only			
Shapiro Wilk Test Statistic	0.841	Normal GOF Test on Detected Observations Only	
5% Shapiro Wilk P Value	3.83E-12	Detected Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.164	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0984	Detected Data Not Normal at 5% Significance Level	
Detected Data Not Normal at 5% Significance Level			
Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs			
Mean	13.76	Standard Error of Mean	1.135
SD	10.34	95% KM (BCA) UCL	16.01
95% KM (t) UCL	15.65	95% KM (Percentile Bootstrap) UCL	15.63
95% KM (z) UCL	15.62	95% KM Bootstrap t UCL	15.93
90% KM Chebyshev UCL	17.16	95% KM Chebyshev UCL	18.7
97.5% KM Chebyshev UCL	20.84	99% KM Chebyshev UCL	25.05
Gamma GOF Tests on Detected Observations Only			
A-D Test Statistic	1.425	Anderson-Darling GOF Test	
5% A-D Critical Value	0.763	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.163	Kolmogrov-Smirnoff GOF	
5% K-S Critical Value	0.1	Detected Data Not Gamma Distributed at 5% Significance Level	
Detected Data Not Gamma Distributed at 5% Significance Level			
Gamma Statistics on Detected Data Only			
k hat (MLE)	2.086	k star (bias corrected MLE)	2.017
Theta hat (MLE)	6.796	Theta star (bias corrected MLE)	7.029
nu hat (MLE)	337.9	nu star (bias corrected)	326.7
MLE Mean (bias corrected)	14.18	MLE Sd (bias corrected)	9.982
Gamma Kaplan-Meier (KM) Statistics			
k hat (KM)	1.771	nu hat (KM)	297.6
Approximate Chi Square Value (297.55, α)	258.6	Adjusted Chi Square Value (297.55, β)	258
95% Gamma Approximate KM-UCL (use when n>=50)	15.83	95% Gamma Adjusted KM-UCL (use when n<50)	15.87
Gamma ROS Statistics using Imputed Non-Detects			
GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs			
GROS may not be used when kstar of detected data is small such as < 0.1			
For such situations, GROS method tends to yield inflated values of UCLs and BTVs			
For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates			
Minimum	0.875	Mean	13.71
Maximum	62.13	Median	13.27
SD	10.45	CV	0.762
k hat (MLE)	1.785	k star (bias corrected MLE)	1.729
Theta hat (MLE)	7.681	Theta star (bias corrected MLE)	7.929
nu hat (MLE)	299.9	nu star (bias corrected)	290.5
MLE Mean (bias corrected)	13.71	MLE Sd (bias corrected)	10.43
		Adjusted Level of Significance (β)	0.0471
Approximate Chi Square Value (290.51, α)	252	Adjusted Chi Square Value (290.51, β)	251.4
95% Gamma Approximate UCL (use when n>=50)	15.8	95% Gamma Adjusted UCL (use when n<50)	15.84
Lognormal GOF Test on Detected Observations Only			
Lilliefors Test Statistic	0.209	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.0984	Detected Data Not Lognormal at 5% Significance Level	
Detected Data Not Lognormal at 5% Significance Level			
Lognormal ROS Statistics Using Imputed Non-Detects			
Mean in Original Scale	13.77	Mean in Log Scale	2.343
SD in Original Scale	10.39	SD in Log Scale	0.795
95% t UCL (assumes normality of ROS data)	15.65	95% Percentile Bootstrap UCL	15.6
95% BCA Bootstrap UCL	15.79	95% Bootstrap t UCL	15.93
95% H-UCL (Log ROS)	17.09		
DL/2 Statistics			
DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	13.72	Mean in Log Scale	2.319
SD in Original Scale	10.44	SD in Log Scale	0.846
95% t UCL (Assumes normality)	15.61	95% H-Stat UCL	17.65
DL/2 is not a recommended method, provided for comparisons and historical reasons			
Nonparametric Distribution Free UCL Statistics			
Data do not follow a Discernible Distribution at 5% Significance Level			
Suggested UCL to Use			
95% KM (BCA) UCL	16.01		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. Recommendations are based upon data size, data distribution, and skewness. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

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Category	Item	Value	Unit
General Information	Project Name	Project A	
	Project ID	12345	
	Project Manager	John Doe	
	Project Start Date	2023-01-01	
	Project End Date	2023-12-31	
	Project Status	In Progress	
	Project Budget	\$1,000,000	
	Project Location	New York, NY	
	Project Description	Development of a new software application.	
	Project Contact	John Doe	
Financial Data	Revenue	\$500,000	
	Cost	\$300,000	
	Profit	\$200,000	
	Revenue Growth	10%	
	Cost Reduction	5%	
	Profit Margin	40%	
	Revenue per Unit	\$100	
	Cost per Unit	\$60	
	Profit per Unit	\$40	
	Revenue per Hour	\$100	
Operational Data	Production Volume	10,000	
	Production Cost	\$300,000	
	Production Time	100 hours	
	Production Efficiency	90%	
	Production Quality	95%	
	Production Safety	100%	
	Production Environment	Indoor	
	Production Equipment	Machine A	
	Production Materials	Material X	
	Production Labor	10 workers	
Marketing Data	Marketing Spend	\$50,000	
	Marketing Revenue	\$100,000	
	Marketing Profit	\$50,000	
	Marketing Growth	15%	
	Marketing Cost	\$25,000	
	Marketing Time	100 hours	
	Marketing Efficiency	80%	
	Marketing Quality	90%	
	Marketing Safety	100%	
	Marketing Environment	Indoor	
Human Resources Data	Employee Count	100	
	Employee Cost	\$500,000	
	Employee Time	1000 hours	
	Employee Efficiency	85%	
	Employee Quality	90%	
	Employee Safety	100%	
	Employee Environment	Indoor	
	Employee Equipment	Machine A	
	Employee Materials	Material X	
	Employee Labor	10 workers	